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All papers were reviewed in discussion and workshops during the conference and in conclusions they were recommended for publication.

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CLIMBING AND MOUNTAINEERING FROM A HUMAN PERSPECTIVE

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"Climbing is not a battle with the elements, nor against the law of gravity; it is a battle against oneself." Walter Bonatti

In this paper, I have tried to show the general connection between climbing or mountaineering and its significance in a man's life. I fully realize that it is a very extensive topic which cannot be covered in a single study, however long it may be. Nowadays plentiful specialized literature deals with almost all the aspects of climbing and mountaineering. Some works focus on the climbing technique, training, equipment, safety guidelines, and its social and psychological relevance. The literature concerning the physiological and medical basis of climbing and mountaineering is also quite extensive. Moreover, conferences and workshops focusing on the scientific monitoring of climbing and mountaineering are organized on a regular basis.

I have no other choice but to take a personal stand on the human perspectives of climbing and mountaineering, which is influenced by my youth adventures and experiences, studies at the first college of physical education in the former Czechoslovakia and my long teaching carrier.

Historical context

I have grown up towards the end of the World War II in a small village in the south of Moravia. Like my father, I liked climbing on the trees and improved my technique especially when 'testing' the cherries and apples in the neighbouring gardens. I could quickly get over fences and walls. My showpiece was jumping in the tree- tops from one tree to another.

I was so obsessed with climbing that I was testing my skills on the rocks around the Vranov dam. I have survived all that. Later as a trainer, I used climbing in many exercises and training sessions. I was convinced that climbing is an essential part of the human movement repertoire. Therefore I insisted on climbing to be practiced and further developed from the early childhood. Only later did I find historical sources that further corroborated my opinion.

I got to the real climbing at the end of the 1950' when I was studying at the College of Physical Education in Prague where climbing was a part of the obliga-

tory curriculum. Each and every student had to ascent a route rated III. on the UIAA scale in the High Tatras.

This practice is still quite unique in the world today. I am glad, I could take part. I was impressed by the beauty of the mountains and by meeting excellent climbers, who were reaching a very good European standard of that time (J. Mašek, O. Kopal, J. Procházka, M. Blahout, G. Takácz and others). From that time on, I combined climbing as hobby with conquering mountaintops. All that has been embedded in my memory and as a consequence I am one of the promoters of climbing and mountaineering in the curriculum of UK FTVS Prague and its integration into the programmes of schools and youth organizations. I am glad that this enthusiasm is followed by my young colleagues and students, who take a very professional approach to it.

Climbing and mountaineering – a part of modern trends

Climbing and mountaineering matches also the current trends. Nowadays, certain population groups are interested in high-risk and adventure activities which are carried out in the nature or in an artificial adventure environment, such as artificial climbing walls and artificial obstacle courses. The needs of the post-modern man play into the hands of the climbing and mountaineering promoters. We are gradually getting more support for the introduction of these activities into recreation, learning and education. All institutions concerned should be motivated by this development and exploit it reasonably to the benefit of the human development and cultivation.

The importance of climbing and mountaineering to the enhancement of quality of contemporary life

Climbing on artificial walls and yet more on natural rocks, is a good example of an activity which demands full concentration. One has to be fully focused on what he is doing, he is forced to think and summon up all his strength to be able to overcome safely the chosen route.

This state has been studied by an American psychologist M. Csikszentmihaly who called it a state of flow experience.

A state of flow experience is a situation when a person has clearly set goals, he is completely absorbed by the chosen activity and paying full attention to what is happening and furthermore he enjoys living the experience.

The state of flow experience is bound to the autotelic personality. This is a person that is hardly ever bored; he does not suffer from anxiety and is fully absorbed by the things that are happening around him. He lives most of the time in the state of flow experience.

Such development of an activity, i.e. the state of flow experience, is the aim of the activity itself; it brings inner satisfaction and enjoyment (Csikszentmihalyi 1996).

Hogenová 1994 adds that the outdoor sports (including climbing) are an important way of continuous return to man's original experience. In a figurative sense, it is possible to say that climbing in the natural conditions contributes to the humanization of our social existence. This idea is not new. G. Simmer pointed out at the end of 19th century that an alpinist undertakes trips to the mountains with the aim to achieve the highest objective values.

Multiple possibilities for the use of climbing in recreation, learning and therapy

Climbing and mountaineering is a part of the programmes at a number of events that target many different objectives. Many schools and organizations use climbing in line with the following four areas:

Free time activities. An important aspect of these activities is fun, entertainment and enjoyment. Recreation is often connected with excitement and adventure. It is also an opportunity for the modern man to establish contact with other people and with the nature.

I am very much in favour of the use of climbing in the school curricula, for climbing and bouldering on the artificial walls enriches the traditional conception of physical education. Climbing on the artificial walls and in the nature provides also an opportunity for education and learning.

Climbing and mountaineering is one of the basic units in development programmes, which enhance responsibility and courage and provide risk elements. They are mainly used for company managing teams. However, similar approaches are applied at other management levels, e.g. schools and community management.

Therapy through adventure is a relatively new, dynamically developing area. Its most significant objective is the enhancement of self-confidence and trust in other people. Through suitable selection of programmes, the people find a new will to live, to seek new life horizons and they become valuable members of the society.

Aspects of the sustainable development

When climbing in a natural environment, the climbers often violate the rules of the Nature Preservation Administration. The society has to realize that unregulated climbing in the natural environment can harm protected plants and small animals. The high concentration of climbers and climbing routes negatively affects the rocks and brings about erosion. The rock surface is being worn out and the tree root systems are damaged on the highly exposed spots.

Many studies (Schemel, Erbguth, 2000) insist that the Nature Preservation Administration and the climbers have to find a joint solution. The climbers themselves and its representatives should take an active part in the preservation

of exposed spots. The interests of both groups must be taken into consideration. Educational programmes shall underline the fact that the rocks are not a 'big gym', but a space where plants and animals have been living in harmony for several millions of years. We are obliged to try to find new ways to the sustainable development of climbing and mountaineering in the Czech Republic and also in Europe.

It seems that the construction of artificial climbing wall facilities helps to satisfy a great part of the devotees of this interesting and adventurous activity. As a result of that, the pressure on the natural environment diminishes.

Economic aspects

The increasing popularity of climbing in natural and artificial environment brings about not only the need to construct new climbing centres but also to produce more specialized equipment and to improve and expand tourist offers. In consequence, new professions have been created and climbing plays a quite important role not only in the traditional but also in the newly discovered climbing areas.

Support to the personal development

It is evident that a regular climbing practice in the artificial and natural environment can contribute to a better physical condition and health. Climbing exercise is an important part of the basic movement repertoire. It suggests risk and adventure. It is an area that is rich in powerful experiences and is often given as an illustrative example of pushing one's own limits. It is a discipline with a great potential for the development of moral conduct and esthetical feeling.

Conclusion

This concise summary of the benefits of climbing and mountaineering brings up the question whether there is enough material to support the above stated propositions? It is to be added that the current changes should be continuously monitored; the world is changing and the function of climbing is much more complex than ever before. Therefore it is necessary to give support to new research projects at a national and international level. It is important that the experts from different areas exchange their experiences and keep personal contact

I hope that we will keep on seeing each other at this autumn meeting. To conclude, let me invite all the interested parts to seek new human perspectives of climbing and mountaineering.

References

Attarian, A., Artificial Adventure Environments. In: Miles,J.C.,Pries,S. (eds.) *Adventure Education*. State College: Venture Publishing 1990 , pp. 345-356

Aufmuth,U. *Die Lust am Aufstieg. Was den Bergsteiger in die Höhe treibt.* Drumlin Verlag: Weingarten. 1984

Csikszentmihalyi, M., *O štěstí a smyslu života.* Praha: Nakladatelství Lidové noviny. 1996

Drasdo, *H. Education and the Mountain Centres.* 3.vyd. Penrith: Association of Outdoor Learning. 1998

GutsMuths, J., *Ch. F. Gymnastik für die Jugend.* Schepfenthal: Verlag Buchhandlung Erziehungsanstalt. 1793.

Hogenová, A., Reasons for outdoor sports pursuits. In : Neuman J,Mytting, I.,Brtnik,J. (eds) *Outdoor activities. Proceedings of Int. Seminar Prague 1994.* Lüneburg: edition erlebnispädagogik. 1996, pp. 15–17

Kožíšek, F., *Šplhání.* Praha. 1921

Messenger, N., Patterson,W., Brook, D. *The Science of Climbing and Mountaineering.* CD-ROM. Human Kinetics

Neuman, J. a kol., *Turistika a sporty v přírodě.* Praha: Portál. 2000

Neuman, J.,Vomáčko, L., Vomáčková, S., *Překážkové dráhy, lezecké stěny a výchova prožitkem.* Praha: Portál. 1999

Opaschowski, H.W., *Xtrem. Der kalkulierte Wahnsinn. Extremsport als Zeitphänomen.* Hamburg: B.A.T. Freizeit – Forschunginstitut. 2000.

Schemel, H. J., Erbguth, W., Reichholf, J., *Handbuch Sport Umwelt.* Aachen: Meyer und Meyer, 2000 .

Simmel, G., *Alpenreisen.* Der Zeit (Wien) 4, 13.7. 1895

DIALOGUE WITH THE ROCK

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Objectivity exists only within the field of subjectivity which was designated by Cartesius as the source of certainty, i.e. of truth itself. Where man thinks as a subject also an object is always present, albeit implicitly and not expressly. That is why the entire development of modern thinking moves, floats, exists and is valid in the subject-object opposition. There is no other way. The description of all sciences begins with their subject to which the 'gnoseological subject' inclines. The bridge between the subject and the object is formed by methods, and he who teaches methodology exerts control over the intellectual state of human activity. How many times has this been so already?

This state is the cause of voluntarism of the subject in decision-making positions. Masaryk used to call this state 'subjectivism' of the modern era, and often spoke of titanism in this connection. Who were the titans? They were the children of Gaea and Uranus, Kronos and Rhea. Ultimately, they were hurled down into Tartaros by the victorious Olympians, i.e. by Zeus, Hera, Artemis, Apollo, Ares and others. In the Gigantomachia, the gods of light defeated the gods of darkness and night.

The modern titan is a man in whom the supreme truth is vested as subjective truth. This truth is certain (certitudo). The modern titan has the object before himself only and solely for the purpose of owning, for his affirmation. Ownership of the object serves as signum of his own subjective power. Nature has become an object, being here only and solely for the purpose of owning. Modern entrepreneurs do not regard it as anything else. Nor can they. They appraise everything from within themselves, from their intellectual complexity. Their existence is tied to undertakings as to activities that bring benefit and wealth to all. However, bringing benefit to people is not the supreme purpose of life. Becoming man to an ever higher extent means to assume responsibility for nature. And nature is not an object, being on the contrary a part of ourselves.

Extended arms and legs become ingrown in the Earth and the heavenly arc, ancient mythical stories tell us. Our soul draws circles that penetrate not only nature on our Earth but also touch the cosmos with its vast distances. The circles return in order to, in the sense of 'legein – to collect' (hence logos) – make simplicity from multicity, simplicity that we cognize with evidential certainty. Our being thus becomes ingrown not only in nature around us but also in the cosmos as in something that transcends each of us. Only man is aware of the enormity of our

essence. No animal has such a soul the circles of which extend to cosmic distances. The laws that are in force in the community and that apply also to nature are laws that we cannot perceive as mere conventions, i.e. as results of an agreement between antagonistic parties. The law is something that the case itself necessitates and man only makes public. It is not a matter of convention and agreement. The legislator must understand nature in a different way than the natural scientist who describes and explicates it, from a certain point of view, precisely and controllably. For explaining what is necessary, and what comes from the thing itself, another insight is required than a strictly methodically governed process described by means of some methodology. Nature around us is our extended personal body. The interconnection of our bodies with trees, meadows and rivers is something that cannot be perceived by our sensory eyes. We have to possess the capacity of insight into the essence of our existence. Expertise does not suffice for the purpose. And therein rests the greatest mistake of the present-day defences of nature.

The mountaineer establishes intrinsic, physical and intellectual contact with the rock. It is an enormously rare form of union with nature, with stones that originated some three to four hundred millions of years. It is an intrinsic contact with something that bears the traces of almost 'eternity'. It is a dialogue not expressible in words. The mountaineer must experience the dialogue both physically and intellectually. For the mountainer, the rock is not an object, just as water is not an object for the swimmer. Rocks and water become part of the persons themselves, calling for a dialogue of a certain character, and speaking their own language.

The original 'legein' (λεγειν) means collection into simple oneness. This oneness is so simple that it becomes absolutely self-evident validity of some activity, and 'legein', i.e.the original logos, is concealed in this self-evidence. And in thinking and in life (both being the same), what matters is nothing else than this logos the validity of which has been reduced only to logic perceived as the technique of our correct thinking. Why? Because what matters above all is certainty which is the essence of truth itself. It is precisely this transformation of non-concealment into certainty that has brought about the self-evidence of the factual and ownership approach to nature as to a mere object. It is thus not appropriate to blame solely the individual for the ongoing devastation of nature; the problem is deeper, and as is often the case, it is not sufficient to provide explanations from the viewpoint of occurrence sociology, which is the viepoint of the large majority of present-day ecological activities, but what is needed is a deeper insight into man's approach to oneself and to the world in general, i.e. it is necessary to comprehend the existential preconditions of the life of the individual and the entire present-day society.

"Das Stein ist weltlos, das Tier ist weltarm, der Mensch ist weltbildend", says Martin Heidegger, as if parenthetically.[1] Yes, the stone is without a world, the animal has only a very poor world, thanks to its innate instincts, but man is he who creates the world. How does man create the world? In fact, the world already exists, and people are merely being born into the world, nothing more! Yes, the world is already here when we arrive, but man does put finishing touches to the world because only man is cognizant of the world in its entirety. This entirety has a special character, has no margins, is not a concept, is not a subject, is existence itself. Since we know of this world, we also bear responsibility for the world in which people and animals live, and which contains stones and other things. The rock climbed by the mountainer is 'weltlos', (having no relationship with the world as a whole), yet in can be engaged in an intrinsic dialogue with man. This dialogue is enormously important precisely because of man's responsibility for the world as a whole. Why? The mountaineer on the rock meets with something that he cannot but to respect, intrinsically. What is the fundamental thing encountered by the mountaineer? It is not the rock as the hard objectivity, it is something entirely different that reveals itself only through the rock. Man encounters here something stronger than any will to power. Nietzsche might have written something quite different, had he been a mountaineer. It is nature that puts limits to our human endeavours. And thus it would be good if it was mandatory for the members of the highest political decision-making structures to do some rock climbing, because out there, they would realize that something else matters than brilliant rhetoric and semblance of truth in their speeches on the floor of the parliament. Even in Plato's cave, there is the final ascent in rock climbing, in a narrow chimney, involving the highest degree of responsibility. No one is there to help the person making the ascent. There are frequent references to chórismos in this connection. Chórismos is a special phenomenon in Platonic philosophy. It means a meeting with the force of something that has no limits, that accords with no definition, that man is incapable of imagining, that constitutes no subject that can be measured by no one and cannot be proved by means of the senses. It is perhaps for this reason that so many philosophers including Aristotle were militant opponents of chórismos. Man experiences chórismos only during risky performances which require man to give his all performances during which man is wholly in the power of something that transcends him infinitely. Enormous bravery is required for this, bravery of which man does not speak but which he 'lives'. Bravery that can be expressed in words only for the direct participants. Chórismos is a meeting with the power of what is sometimes termed 'Nothing'. Heidegger called it being (Sein). And it is precisely this being

[1] Heidegger, M. (1983). Die Grundbegriffe der Metaphysik. Frankfurt am Main: Vittorio Klostermann, p. 261.

that makes a breakthrough into time, i.e. at a moment in time, it i possible to experience this being. What it requires is experiencing, in solitude and seclusion, what is termed chórismos (nothing). All mountaineers know it; only they don´t talk about it. Why? Because it is, in fact, not possible. What occurs here from the viewpoint of phenomenology? The original logos occurs. What is logos? Logos is not only "word, science, reason, judgment, opinion etc.", logos is the original collection into simple unity. The word 'logos' is derived from the Greek verb 'legein' (λεγειν) which means to collect. We find the word in Homer's Odyssey, for collecting grapes in vineyards, collecting ears of grain in fields, and for collecting wood in forests. In all cases, it means collection into simplicity. Just as the word 'rock' collects into the simplicity of the term all the existing and imagined rocks in general, science collects individual laws that collect lawsuits into simplicity, etc. Judgment and opinion carry the simple intention as the result of legein, reason is the ability to make from the numerous and varied what is identical. This act of reason was sometimes called dialectic. 'dia' meaning through, and 'lectic' being derived from the word 'logos'. What logos in the sense of the original collection into simple unity is achieved during rock climbing? Union is achieved with what is the basis of all of us, for what we are unable to find the right term, what cannot be grasped by the hands but what wields absolute power over us. And that is being itself. Rock climbing is in fact a highly philosophical activity, profound and transcendent.

What our present-day life lacks is this meeting with being. We meet only with existences of which there are many. We meet with systems that control us because they are objective. We have no other option than to submit to them. Sanctions are imposed for any act of resistance because an integral part of the functioning of such a system is inevitable penalty when we fail to respect it. Such a system is legality, so complicated today that even lawyers don't understand it, let alone normal laymen. The redundance of legality then suits those who make use of the ensuing chaos for their enrichment, for their benefit and for asserting their personal power. Most of the people only stare vacantly and repeat the timeworn cliché: It's fate, it's objective necessity, there's nothing that can be done.

And thus the holocaust itself and the systematic preparations for it had not open people's eyes; on the contrary, people had become accustomed to the systems as to something that was absolutely objectionableless. Words as if had lost their power to say anything about the roots of our own existence. Yet there is still the dialogue with the rock which attests to the transcendence, with such evidentiary force that it is imposible to doubt that there is something stronger in the world than human will and than man himself. Of late, we are reminded of this also by natural disasters (tsunami, floods, earthquakes, pointless wars etc.) But the consumption-oriented world of the western civilization is unconcerned, relying confidently on its technical perspicacity. And it is precisely technology that provides not merely a multiple

of means designed to make our life easier, but in its deepest essence is a form of the power of the human will to dominate the objective world. However, this world is not based on a confrontation with transcendental being (chórism) but is a confrontation only with individual things, with systems and structures, i.e. with existences. And that is precisely why mountaineering is something that reminds man of being, of responsibility for the whole without margin. What happened once can be repeated at any time. There are no forces in the world that could prevent it. What is there today that can still be trusted? Nothing, Lóvinas would say. What only remains is the individual man and his personal solitary activity of a 'forest walker'. It is only this individual who matters because only in him is it posible to awaken the so-called asymmetrical activity for the whole; and if this man is capable of exposing himself to risks, as mountaineers do on the rock face, then there is still vital hope not only for us but above all for the coming generations.

The rock is not an object. It is a gate to self-discovery, and therefore a part of our subject, a part of our intrinsic ego. Rock climbing thus means engaging in an intrinsic dialogue with what is the essence of man, making his existence possible, and therein rests the greatest contribution of this sort to humanization.

There is probably no sport more philosophical than mountaineering. It makes possible such a union of man and nature that facilitates penetration to what is its basis and intrinsic precondition. Man's dialogue with the rock is not only concentration but also meditation, deep identification with every hold, upward step, with every crevice. It was not incidental that Pythia in Delphi (i.e. in the vagina of the Earth the Great Mother) prophesied the future to ancient Greeks and revealed the deepest truth. The vagina of the Earth, Gaia, is a defile between rocks leading very deep into the interior of the Earth. Gaia has also her navel (Omphalos) which can be touched by every tourist in Delphi. Stones and rocks are what Kant uses for the purpose of comprehending nobility. Silence of rocks in the wind provides an answer to man's eternal quest for the meaning of his unique life. Stones were used as sacrificial altars on which blood of sacrificial animals was shed. It is the stone that does not permit impurity, and therefore sacrificial knives were always made of stone. The stone is the symbol of silent collectedness, and thus of grief, and that is why in our cemeteries, stones bear witness to the depth of the silence of those buried under them.

The stone is pure because it is not associated with any elements; water does not affect the stone, nor does fire, let alone air. That is why the stone is the symbol of pain. Why?

Because also pain is pure difference. Each pain makes it known that an afflicted organ in our body wants to leave the harmony of the whole, wants to gain independence, i.e. separates itself from the union, giving rise to difference from everything around. This difference, this border between everything is an attempt at separation

from everything; it is the same property as that of the stone which "behaves" in the same way. That is why pain and stone are one and the same thing. Heidegger even says: "Stone is the Ge-birge of pain."[2] In another place, we read: "Pain is difference itself,"[3] and it is this difference, this fundamental separation from everything that we know in nature, which is typical for rocks and for stones.

Entering a dialogue with stones and rocks means that we speak also with what constitutes loneliness and pain. It is not a dialogue held by means of words in sentences and opinions. It is a dialogue in the language of the body, and this language, as we know from Nietzsche's works, is deeper than the language by means of words. The rock educates by silence, forced silence. It is only here that man realizes that he is a component part of a much higher order against which he is powerless. He realizes here, through intrinsic experience, that he is merely an insignificancy, and he begins to esteem nature from the depth of his own ardour which is felt and sensed. Those who do rock climbing know what this is about.

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2 Heidegger M. (1959). Unterwegs zur Sprache. Tubingen. Verlag Guenter Neske Pfullingen, p. 45

3 Ibidem, p. 27

ECONOMIC BENEFITS FROM CLIMBING TOURISM

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Abstract
Climbing is increasingly popular as a sport. It is closely connected to tourism because it is still mainly an outdoor sport but the best climbing areas are mostly not in densely populated areas. The economic value of climbing tourism is discussed controversially in literature and among practitioners, however. This has an impact on the funding and promotion of climbing. Therefore, the research question of our presentation is whether climbing tourism can offer substantial economic benefits to destinations.

Data from two qualitative studies and one quantitative study among 260 climbing tourists in four different destinations (Frankenjura, Elbe Sandstones, Garmisch-Partenkirchen and Arco) was collected. To assess the economic benefits from climbing tourism the results on length of stay, expenditures and age average are compared to data from general tourism at the same destinations. Additionally, the activities climbing tourists engage in besides climbing are discussed to explore cross-selling possibilities.

The results show that, of the four destinations researched, climbing tourism is only economically attractive at Arco in Italy which is the only destination included that actively promotes climbing tourism.

The example of Arco shows that climbing tourism can offer substantial economic benefits to destinations. This raises the question, how destinations can improve their offerings for climbers. Therefore the most important motives of climbers to visit a specific destination will be presented and implications will be discussed.

CLIMBING AND MOUNTAINEERING: WHAT DIFFERENCE?

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The past twenty years have witnessed a qualitative break between mountaineering as it has developed over the last two centuries and is still practiced, and climbing as it is practiced nowadays.

Two kinds of arguments may be put forward to justify this viewpoint: quantitative indicators are proposed which highlight these developments and an analysis of the market of professional supervisory staff, with the emergence of new professionals and the transformation of the products offered.

To explain this development, we argue that the fundamental difference between mountaineering and climbing, which are so closely related as to body language and some basic techniques, can then be identified from that mountaineering has a relation to danger (and the most definitive one, the one that threatens life) that climbing tries by all means to eliminate.

Moreover, mountaineering and climbing need to be set in the context of increasing global media coverage and marketing development in order to understand the specifics of the many forms in which they grow. Climbing development meet with two obstacles. The first is an objective one: the deadly risk induced by mountaineering. Modern climbing solves this problem by offering security. A second obstacle, though this time subjective, does remain: the image that mountaineers want to give by claiming their uniqueness. Therefore, appropriation of the symbolic rent characterizing mountaineering is more difficult for climbing.

A CRITICAL OVERVIEW OF FRENCH SOCIAL SCIENTIFIC RESEARCH ON ROCK CLIMBING AND MOUNTAINEERING

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Abstract
This contribution is a critical overview of French social scientific research on rock climbing and mountaineering. Based on a bibliography of nearly 300 references, the links between different research studies are analysed and a typological approach by discipline and study theme is proposed. This aims at understanding the diversity of the theoretical positions and their respective contributions to the study of the sports in question.

Without trying to make any comparison with other European countries, the French research on rock climbing and mountaineering reveals an important scientific dynamics among the scientific community that work in the fields of outdoor sport activities. If we look beyond the numerous published works from sportsmen, journalists, university graduates and enthusiasts that we may have found in France since the beginning of the 20th century – works that are very often of a very good quality – we may consider that the years 1980–2005 have been branded by an outstanding rise of the French research. With the help of a load of bibliographical resources available in France on the topic of the practices of rock climbing and mountaineering, we shall try to bring up this scientific dynamics among social sciences.

I. Structuring of institutions and research study groups

The development of this research is linked with the rise of different structures that contributed to the launching of this movement. In this respect, we must consider the important role played by the *'Ecole Nationale de Ski et d'Alpinisme'* (ENSA) of Chamonix and the various *'Centres Régionaux de l'Education Populaire et Sportive'* (C.R.E.P.S.) (in charge of the training of sports in various regions in France) of Vallon-Pont-D'Arc, Voiron, Marseille and other towns, in bringing up ideas, works and publications on the analysis of the practices of rock climbing and mountaineering. Indeed, the setting of a national observation centre on mountain safety (C.N.O.S.M.) at the ENSA, and the work of a group of teachers who have produced different reports for people on a training period and for people living in the mountains, as well as the various research studies carried out by the teachers of the C.R.E.P.S. have contributed to the rise of this institutional force that was very active

during the 1980's. On top of that, the important need from territorial populations, tourist operators and state services (tourism, sports) during the period 1980-1985 for a study in this field must be taken into account.

One cannot underestimate the impact of the institutional and professional need that have participated in concentrating the production of knowledge based on a scientific approach, such as for example the series of files published by the *'Agence française d'ingénierie touristique'* (AFIT).

In a parallel direction to this movement, we must consider the central role played by university graduates in the rise of a specific field of research about sports and in particular in the fields of mountaineering and rock climbing. Beside the role played by a few teachers and researchers in various fields (history, law, anthropology, economy, sociology, linguistics), we must take into account the driving contribution of university graduates in the fields of sciences of physical and sport activities (STAPS) and of geography. Thus, we can notice a strong dynamics among laboratories in Grenoble (Territories et SENS) and Paris (Paris X et XI), but also in Toulon, Strasbourg, Aix-Marseille et Montpellier. Those few researchers' forceful investments (there are about fifteen researchers involved) who work alone or with small university groups, are responsible for most of the production and for the development of the knowledge in this field, be it in the form of publications of scientific articles, of works and study reports, or the organising of conferences.

Finally, the presence of numerous associations greatly improve the organisation of exchanges among this scientific and professional community. It's the case in particular for the *'Association pour la recherche, l'innovation et l'adaptation en montagne'* (APRIAM, created in 1985), and for the Network of researchers and experts in mountaineering and outdoor sports (www.sportsnature.org, created in 1999) that concentrate a great part of the scientists working in this field of study, but it is also the case for a study research group oriented towards the history of mountaineering ('Babel Montagne') and also for another research study group on ethics (*'Observatoire des Pratiques de la Montagne et de l'Alpinisme'*, OPMA, created en 2000) whose interwoven and added dynamics make it possible for the development of various lines of thoughts, studies, meetings and publications in that field.

In this respect, we can observe that the symposiums and meetings that have been organised by these study groups – as well as the articles that have been published as a consequence – have played a major role in the scientific development and animation. We can mention in particular the symposiums *'Escalade 89'* in 1989 (Chamonix), *'Tourisme sportif et territoires'* in 1999 and *'Les métiers du sport et du tourisme'* en 2000 (Mirabel) (jobs in relation with sports and tourism), *'Deux*

siècles d'alpinismes européens' (2 centuries of European mountaineering) in 2000 (Nanterre), *'Le sport extrême'* in 2000 (Marseille), l' *'Observation des sports de nature'* in 2001 (Valence), *'La montagne, terrain de jeux et d'enjeux'* (the mountains as a playground at stake) in 2002 (Chamonix), *'une montagne de journaux, des journaux de montagne'* (a mountain of magazines, mountaineering magazines) in 2003 (Toulon), *'Le corps alpin'* (The alpine framework) in 2004 (Gap).

This dynamics is also reinforced by the publication of theme issues in social sciences magazines: Magazine STAPS n°51, Magazine Babel n°5, 8 et 10, Magazine about Alpine Geography n°4/2004, European Magazine of Sports Management n°10-11-12.

We may think that this dynamics remains undoubtedly fragile, considering that it is maintained more thanks to the energy of a few people, than by university institutions as such. All the more, the different laboratories and associations mentioned do not operate in an optimum way since the links between those researchers are fragile and more or less steady. We may think that in the years to come, the stake will be on the capacity to structure these study groups in order to contemplate the rise of a genuine scientific community. If the latter potentially lives on today, it hasn't yet truly set the basis for a scientific reflection allowing for the assessment of the load of work produced, to compare them, and to set them into perspective with the focus of the study.

Moreover, this dynamics will probably take part in the constitution of a global field of research dealing with outdoor and mountaineering sports (hiking, canyoning, paragliding, water sports, mountain biking, raids...) as these sports are becoming more and more predominant in everybody's life. With the multiplication and combination of sports practices and the importance of outdoor tourism and because of the great need of territorial professionals, who somehow modify their behaviour and habits in the face of those practices and the need for more knowledge on the subject, we may be led to think that the dominant range of scientific productions dealing with mountaineering and rock climbing will be transformed. This opening marked by the emergence of new researchers and new research teams will allow other ways of understanding and deciding new scientific dynamics in wider and transverse approaches. At last, the opening to international connections, which remains for the moment extremely modest in terms of cooperation, study subjects and publications, must aim in the future at bringing up comparisons, exchanges and the emergence of research poles in international research. A whole dynamics will thus emerge in the likeness of your conference, which will undoubtedly help in developing collaborations and tracks of fruitful research studies between researchers from different countries.

2. The dynamics of research studies and scientific publications

A varied literary work field

To start with, it seems necessary to bear in mind the importance of the publications handed out by enthusiasts, journalists, scholars and witnesses within the framework of a literary production which functions on the same lines, and in total independence with the scientific world. Life and culture of mountaineering has been marked in France by the publication of numerous works (notably published by the publishers Arthaud, Glénat, Guérin) and articles in monthly specialist magazines (Alpirando, Montagnes magazine, Vertical), as well as in quarterly magazines (La Montagne et alpinisme) and yearly magazines (Passage, Revue du Groupe de haute montagne, Altitudes). The quality of these writings cannot be underestimated. First of all, they constitute a world of reflection, of knowledge and analysis on the practice of sports and its evolutions, its rules and main organisers. The high percentage of higher social classes, and in particular from 'literary bourgeoisie' among mountaineers accounts in part for this situation. Thus we own a rich literary heritage in technical works, and in some writings with a political sociological and humanist trend. As Bruant (2002) recalls it, this practice of thinking also stems from the necessity to produce a symbolical mediation specific to this culture in the midst of the community of sportsmen. These cultural references alluding to images of the 'outside', of commitment, death, aesthetics of the practice and of its ethics, are the very basis of the constitution of a strong collective deep-rooted attraction to this practice. Moreover, another section from these writings are in the form of stories about mountaineering or climbing and life stories that constitute an extremely rich material for the researcher, as it provides real history facts, technical ideas about mountaineering and course of action, and about social practices. Here again, we have a cultural heritage of quality on social habits of the practice of mountaineering (and of modern rock climbing), which researchers use as a study theme.

Segmented and spread out scientific productions

We can clearly see the wealth of scientific productions: they are now categorized (annex). Enumerating these productions doesn't come easily, since the sources of information are varied. At present, there is a community of researchers working on the subject, but there is no exhaustive book-keeping on these data, even if two information centres have gathered parts of these publications (*le Centre national de documentation du Club alpin français in Paris* and the library of the *Ecole nationale de ski et d'alpinisme à Chamonix*). In order to improve this lack of national visibility, the network of researchers and experts in mountaineering and outdoor sports gave itself as an objective to gather together all these bibliographical references on its web site www.sportsnature.org. This step also aims at constituting a shared scien-

tific data base of the different works, which will help in locating the new productions, in assessing their contributions and in providing an epistemological thinking of today's knowledge. One of the aims is to reinforce a constructive epistemology in order to enhance exchanges and relationships among a scientific community that remains for the moment ill-organised.

The assessment of the theoretical and practical contributions of the productions that are available at present is not easy since a research project is to be segmented. Thus, we can note a primary segmentation of the subject in question between first those who focus their work exclusively on mountaineering, and those who study the various practices of free rock climbing since its beginning in the 1970's–1980's, and at last those who carry out global approaches to mountaineering and rock climbing. The latter group of researchers try to link those two entries by considering that the autonomy of free climbing in comparison to mountaineering is not really absolute, and one has to have a comprehensive understanding of the whole concept in terms of social and sports spaces. The second segmentation considered concerns the emergence of poles of research according to the disciplinary entry (sociology, history, geography, political science, economy...) using specific references in the assessment of the writings. Then the topic (mountaineering and/or rock climbing) is only a pretext for the production of knowledge in comparison with a scientific approach (for example that of history). At last, the third segmentation concerns the theme entry favoured by some people (risks, mountain guides, mountaineering in the Himalayas, urban climbing...), which entails further scattering in the unity of research in this restricted community, all the more since this type of approach can be crossed with a disciplinary entry. Conversely, quite a few approaches apply – whether it may be explicit or not – an array of interdisciplinary subjects to a research theme, as we can see in some studies carried out by mountain guides where historical, anthropological, economical and sociological entries are combined...

Besides, the scientific scope of research is crossed with situational and structural dynamics that help in working out logics in scientific productions. Whereas history, sociology and geography appear as dominant and long-term disciplinary entries, one can observe at certain times the emergence of micro-polarities of research (gender, ecology, tourism, media...) that contribute to favour a diversity in the entries. All the same, if the marketing entries have not been registered in the field of knowledge, some writings have been developed at the beginning of the 1990's with the development of free climbing, the rise in economical allowances and the creation of new university curriculum, notably in the STAPS. Thus, we can notice a multitude of micro-fields of research, which raises the question of its unity, and the capacity to elaborate a global understanding of research and scientific pro-

duction. This important specialization not only entails a segmentation of the scientific community but it also make it more difficult to have a global understanding of the dynamics of these practices of verticality.

Specialized or generalized standpoints

In order to complete the overall picture, we can notice that the different polarities and scientific themes are very often marked by the presence of one or two researchers who trigger the research dynamics. It's the case of Jean-Olivier Majastre's works, that of Philippe Bourdeau et Renaud de Bellefon about mountain guides, that of Olivier Hoibian about the social history of mountaineering, of Michel Raspaud about mountaineering in the Himalayas, of Jean-Pierre Mounet about environmental questions, of Michel Mestre and Michel Tailland about Anglo-Saxon mountaineering...

Among the scientific community, we can notice that some researchers consider themselves as the specialists of one particular subject area (gender, mountaineering in the Himalayas, evolution of sports clubs...), whereas some others try to have a more global understanding and to tackle different entries in the approach and the knowledge of a scientific and sports topics. All the same, we can notice that some researchers only work on the practices of mountaineering and rock climbing whereas some others do not hesitate to make comparisons with other sports and outdoor practices or to go from one study subject to another. Some become therefore specialists of the study of sports and/or cultural practices in mountaineering, of outdoor practices, of sportive tourism... We can then see a tendency to tackle this subject more generally by cross-examining the entries and their importance in these knowledge productions in the perspective of the subject and of the considered reflection. This remark is all the more important to be underlined since the room for specialized research in mountaineering and rock climbing tends to diminish (relatively) for the benefit of other entries about mountaineering, outdoor sports, tourism or even management or marketing.

As outdoor and mountaineering sports tend to multiply and diversify, and as we can observe more and more complex combinations between the different practices (mountain biking, canyoning, b.a.s.e. jumping, kite-snow, sports raids, via ferrata...), or between outdoor practices and urban practices, it seems necessary to make a link between the knowledge of these micro-fields and a wider knowledge of the dynamics of research about the whole of outdoor and mountaineering sports (winter sports, air, land and water sports...), and possibly about recreational and cultural practices in a broader sense. Owing to that, many French sociologists and geography specialists (Christian Pociello, Alain Loret, David Le Breton, Jean-Paul Bozonnet, Jean-Pierre Augustin, Bernard Debarbieux...) integrate – or have integrated at some point – an understanding of the practices of rock climbing and

mountaineering to a more global approach of sports culture, to the status of the mountain, or to the approach of contemporary societies.

An expected opening towards international relation

At last, it seems essential to be able to undertake connections on a European and international scale to study the state of knowledge of everybody, the existing poles of research and the different approaches in the way of understanding the practices of rock climbing and mountaineering. There again, this approach will help in developing collective reflections by stimulating a more global approach, which is necessary to get away from an only-French approach in which most works remain. Of course, we can notice a few French research studies on the same topic in different countries (Great-Britain, Romania, Poland, Italy,...) and the emergence of a few collaborations with foreign researchers. Yet it would be wise to reinforce exchanges with some other research centres, universities and European researchers, in order to enrich the load of other people's contributions to complete the different studies carried out on the practices of mountaineering and rock climbing.

3. Space and the dynamics of French research

Without claiming an exhaustiveness in the collection of the publications, we can say that the number of those exceeds the 300 references, and that it is in mountaineering that they are most numerous. When we take into account a disciplinary entry, we can notice that the sociological and historical approaches are dominant without underestimating the geographical approach which is very often mixed with the other two. It is also true as far as rock climbing is concerned, where sociology is presented in the form of a major disciplinary entry without neglecting the strong presence of writings resulting from geography.

Under a more theoretical angle, the definitions of the research topics by disciplinary entry is not elaborated in reference to the scientific community, and they very often result from a personal initiative of the researcher. It is also done under the impulse of a disciplinary dynamics of research (e.g. concerning gender) or to reinforce the presence of a school of thoughts in the way of dealing the disciplinary approach in the field of rock climbing. But generally, there is no formal confrontation between researchers concerning the definition of the legitimate scientific approach. Positioning is done sometimes by omission ("one forgets to speak about such or such researcher(!)"), often by ignorance of some previous writings, or by the will to remain in a certain scientific neutrality. We can notice all the same a historical on-marking of the sociology according to Bourdieu through the writings of Olivier Hoibian, Olivier Aubel, Brice Lefèvre, Jacques Defrance. However, we have observed for some time a paradigmatic opening towards other scientific entries allowing to diversify the approaches of these topics of research studies. For

Studied practices	***Discipline***	***Study theme***
MOUTAINEERING (180[1])	*Global approach of mountaineering (8 +)*	University graduates (8) / Others (numerous)
	History and mountaineering (44)	Social and historical analysis of mountaineering (8)
		Study of social and historical elements of mountaineering (8)
		Study of emblematic portraits and of historical facts (8)
		History and territory (8)
		Mountaineering and gender (20)
	Sociology, anthropology and comparable (24)	Sociological and anthropological approach of sport cultures (8)
		Socialisation (3)
		Symbolical dimensions of mountaineering (13)
	Institutional and political approach (9)	
	Development, marketing, management (4)	
	Linguistics (4)	
	Multi-disciplinary approach (86)	Media and communication (16)
		Rescue, risks (15)
		History and sociology of guides (29)
		Mountaineering in the Himalayas (30)
ROCK CLIMBING (76)	*Global approach of rock climbing (5)*	
	History (3)	

[1] Number of raised bibliographical references

	Sociology of the practice (11)	Social and cultural approach (7)
		Risks (3)
		Socialisation (1)
	Social and institutional approach (5)	
	Sociology of the spaces of practice (15)	Sociology of urban climbing (6)
		Sociology of the spots of outdoor practice (9)
	Sociology, expertise of the professional practices (6)	
	Geography, management and territorial development (11)	
	Law (5)	
	Ecology (1)	
	Marketing (1)	
	Economy (3)	
ROCK CLIMBING-MOUNTAINEERING (32)	*Stakes of a comparison (3)*	
	Sociology (29)	

chart 1: Disciplinary entries and set of themes in climbing-mountaineering

this reason, the approaches of Léseulec, Boutroy, Lord, Mao, Martha, Ottogalli, Corneloup... take part in this opening. Without a doubt, we can think that the stakes of tomorrow will be in this capacity to produce reflexivity on the dynamics of this scientific field of research, the way some sociologists do it in sociology of sports (Pociello, 1995; Corneloup, 2002; Duret, 2002).

To go further in the reading of this dynamics of research, it would be necessary to seize with more depth the contents of each scientific production. From a transverse approach, we can note some interesting tracks of reflection on the structuring dynamics of the field of research relating to the writings on mountaineering and rock climbing.

• A first scientific force emerges in a structural, critical and political reading of these practices. One thus tries to reveal the mechanisms of domination, capacities, social strife or the political stakes which take part in organizing the practices. The

purpose also consists in being interested in the way in which this legitimate practice is being built and defined in an exchange between social groups and political forces. We can evoke the above-mentioned researchers in the Bourdieu vein, but also other scientists (Michel Raspaud, Cécile Ottogalli, Michel Mestre, Emmanuel Nadal, Gilles Rotillon...) who have attempted to explore this field of study.

• A second scientific force is perceived in the will to understand and study the principles and the factors which take part in defining the symbolical representations and dimensions of the practices. The detour by the sociology of the imaginary, symbolical anthropology, cultural geography or linguistics makes it possible to locate these mechanisms and these symbolical markings. We can quote here researchers like Jean-Paul Bozonnet, Jean-Olivier Majastre, Christiane Tetet, Eric De Léséleuc, Cécile Vachée, Michel Mestre, Michel Tailland, Michel Raspaud...

• Some other people show some interest in the study of cultural dimensions and dynamics. The practice can also be perceived as a cultural way whereby we try to decipher the way the physical, technical or symbolical connections are organized and built within the space of practice. We can thus show how this culture is formed according to the evolution of safety techniques, the tools of progression or the development of the space of practice. But we are also interested in the way these social practices are defined within mountaineering populations. One may think of researchers such as Viviane Seigneur, Jean Corneloup, Olivier Hoibian, Eric Boutroy, Philippe Bourdeau...

• Lastly, we can evoke a whole dynamics of research around the territorial question when it is a question of understanding the way the practice in a given geographical space has developed. Works of Michel Raspaud on mountaineering in the Himalayas is an example of this will to show the existence of a geographical specificity, just like those of Philippe Bourdeau concerning the Ecrins massif or mountain guides, of Pascal Mao et Jean Corneloup about the Verdon canyon, or even those of Jean-Paul Zuanon about Chamonix. Some others, from ethnological and sociological approaches, study local dynamics of practice in order to comprehend these cultural and political markings (Aubel, De Léseulec).

Conclusion: towards transverse and international approaches

As a tentative conclusion, one can note a basic tendency concerning French research: the years to come will undoubtedly be characterized by the reinforcement of a scientific community in a network, marked by an internal diversification, multiple ramifications with foreign countries and combinations with other research spaces on sport, tourism and society. With respect to this double phenomenon of fragmen-

tation and opening, it seems important to reinforce the presence of approaches and transverse questionings making it possible to connect in a stronger way the various disciplinary contributions and sets of themes to the construction of knowledge. For this reason, the studies on the bonds between rock climbing and mountaineering, on the role of free climbing in the transformation of the world of verticality, or the establishment of 'bridges' between the history of mountain guides and the feminisation of the practices or a reflection on the contributions of history, geography and sociology in the way of understanding the bonds between the territories and the sporting cultures, constitute interesting tracks of research to be developed. And to take stock on the state of knowledge by disciplines and sets of themes of research, to stimulate and consolidate the exchanges around transverse and reflexive approaches, to support the emergence of a true international scientific community, it would be convenient to organize in the two years to come an international congress (in a European country) about outdoor and mountaineering sports.

References in the Annex 1

Mountain, nature and adventure sports research network:
presentation in the Annex 2

2. MOUNTAINEERING/ CLIMBING AND EDUCATION AND METHODOLOGY

CAN OUTDOOR SPORTS EDUCATION SAVE THE WORLD?

Wilfried Meulenbergs
International Friends of Nature, Vice President
Belgium

Reflections on the educational approach of Friends of Nature in the field of Outdoor Sports

'There was a marmot crossing our path. We wanted to run after it to see it better. But then Stefan stopped us and invited us to sit down, wait and watch. It took quite some time: we had an overwhelming view over the glaciers on the other side of the valley and then the little fellow came peeping out of a hole and stood on a boulder, looking around and apparently also looking at us. It was so wonderful, so amazing to see this animal observing us, us observing him…

Stefan then explained us a lot about how these animals survive in the wintertime and how they breed… Never ever before I had such an interesting lesson in biology! And he is not even a real teacher, but our climbing-instructor' (Silke, 16)

'I think I got it. I never understood how this orienteering worked, nor did I like to read maps. In a way, it always went too fast for me, and there were always others around who knew how to find the way… This afternoon I finally got it and I could point out the mountains on the map, and find the exact path to go to the hut. Tomorrow I wane climb with Shana and Marissa, and I wane lead the tour this time!' (Lisa, 15)

'I hate French, I really do. At school the teacher makes us read those dull texts and learn boring grammar. What for? Get always bad marks anyway! But now we had to prepare our route for the next day. I was so pissed off when they gave me and Joren this little route-description-book, completely in French! Godverdoeme! Luckily we got a dictionary with it, so we kind of translated it word by word. And then there were those two local guys watching us all the time already: they helped us a lot, showing us on a map and a postcard how to go best and telling us (in French…) when to get up. Merde, that early! But anyway, I should learn some French if I am to go into the mountains by myself one day.' (Lars, 14)

These quotes, taken from the mouth of participants in a summer-camp, give some examples of how education can work in outdoor-sports. In a non-formal con-

text, a challenging but safe environment, the learning process develops in 'learning by doing'.

This 'education' is one of the core issues that we want to address in this Conference, building up on what we started last year in the first International Symposium on Outdoor Sports Education (OSE).[1]

It would be all too vain and ambitious for me to try adding something completely new to what we concluded last year. I therefore would like to make the link with last years' event, by recalling some of the ideas from that Symposium.

Quite basic for that event were the contributions by Jan Neuman (Charles University, Prague) and Andy Martin (Massey University, New Zeeland). They made clear to us that one of the important cradles of OSE stands in CZ. The long lasting tradition of 'Turistika' and outdoor sports in general, made CZ a breading place and laboratory for the methodology of OSE. It is thus not by accident that Charles University's Department of Physical Education is one of the initiators of this very Conference and that this Conference is held in this beautiful 'CZ Paradise'.

Peter Kubala (Palacky University, Olomouc), Ivar Mytting (Norwegian University of Sports and Physical Education) and Peter Bentsen (University of Copenhagen) described a similar evolution that took place in the north (Norwegian and Sweden). They clearly described the resemblance of the northern FRILUFTSLIV with the Central-European concept of Outdoor Sports Education. As a 'western' I am indeed always surprised when I travel in those countries in the north and central (and even eastern) Europe, to see how many people, old an young, parents and children, take there backpack every weekend and hike around the countryside. Far more than in our countries where this 'outdoor-life' is much more restricted to a group die-hards or a certain context (outdoor-clubs with rather high contribution-fees), this 'Turistika' is an integral part of the social culture out here.

In last years Symposium 'Nature', both as an object and as a subject, got its full exposure in many of the contributions, of course. This seems obvious, since 'nature' is the place were we perform our activities. But the call for a more respectful and conscious working in this natural environment was loud.

Edwin Jacob (German Sports University, Cologne) held a pledge for the implementation of 'Environmental Quality Standards' for OS activities: it would be perverted to continue 'using up' nature, better be clever and organise a 'sustainable' way of working in the few natural places that are still left. This again seems obvious in western and quite over-civilised/crowded countries like Belgium or Germany…

Bob Henderson (McMaster University, Ontario) yet brought in another perspective on 'ecological awareness in OSE', when he lively described the educational force

[1] International Symposium on Outdoor Sports Education, 18-21 November 2004, Hruba Skala

of OS in pure nature – the Canadian wilderness, hard to find more unspoiled nature… – In his outdoor educational work with young people he integrates narrative techniques and other native American traditions in his methodology, Thus creating not only a unique learning atmosphere, but also initiating a quite particular intercultural learning experience.

And finally I very much remember some contributions that had a more philosophical content.

Anna Hogenova (Charles University, Prague) made us dwell with the great philosophers such as Heidegger, Nietsche and even older ones. As a good teacher she hardly gave us any answers, but blew our mind by asking what we – OS-practitioners – may be looking for out there: could it be 'home'?

The same questioning approach was used by the Brittan OS-trainer, Willem Krouwel, who reflected with us about a possible 'fourth way' in OSE. Bye it he even questioned his own role as a trainer in OS, because 'the fourth way' he challenged us with, focuses more on 'Self Development' and less than ever on actual 'Training'. (Ps: the three other, more common ways, he mentioned were: social utility, interaction with nature and development training).

In this introduction speech I want to link our Conference to the last core topics of the 2004 event. I will therefore go less into the methodology ('how' we do it) of these educational approaches (what we have been doing quite explicitly last year), but try to focus on the ideology ('why' we do it) in Outdoor Sports Education (OSE).

Ideology may sound a big word, even old-fashioned. But it is exactly what I mean to reflect upon: behind every human activity there is an idea, a meaning. How we do things, reflects why we do them. Only when we realise why we do them, we know how to do it. In Outdoor Sports (OS), and the linked education, this is a core thing. The way we perform OS always reflects an ideology. Most of the times this might have been quite unconsciously, sometimes though, the ideology is the basic for the activity.[2]

Outdoor Sports have a rather one-sight reputation in this respect. They were, and still are, mostly linked with values of virility and machismo. Even nowadays we hear trainers say: "Show me you are a man!" in order to stimulate people to perform some challenging movement or act.

Unfortunately this is not new. The present-day macho's of Camel – and other trophy's did not invent this way of doing.

[2] In a recent handbook about 'Attractive Youthwork' (IYNF, 2005), there is a strong pledge for re-installing this thinking about this 'why'. It asks organisations, in order to become more 'attractive', to re-think about their 'values' and 'mission', and see that what they do, matches with them.

In ancient times the young boys of Sparta (Gr), were trained in tuff outdoor activities, in order to select them for the even harder – Spartan – army training. The boys had to sleep outside, find food and water in the wilderness, cross wild rivers, find hidden tracks in the desolate Peloponnesian mountains... Those who were not fit enough were abandoned or perished: they were considered lesser people (= not male) for ever.

The same hard training in the outdoors we still see in some of the few remaining native tribes in Africa, like the Masai, were boys are trained too in track-finding, arrow shooting, spear-throwing, jumping... All this being skills they need to become a man, a warrior, defender of their tribe and cattle.

What we can see as a necessary way of preserving the surviving mechanism of so-called primitive tribes, or a remarkable heritage of an ancient culture, we would not expect to meet in a modern society, where we expect intelligence to be more important to survive than force or braveness.

Yet, in recent times and in the quite modern society, fascist dictators like Hitler, Stalin and other Kim-Da-Jungs sought inspiration is these old rites and used/use these heroic flair woven around OS to strengthen their perverted myths.

Quite spectacular – in our field – are of course the expeditions and explorations that that were send out by these regimes. Alpinism and all other outdoor-activities where there are no direct witnesses to see what is really happening, are easy to use in creating myths: no one, unless the guys involved, knows exactly what and how things happen, reports and even movies are easily manipulated...

Mountaineers seem to be all too willing to give in to the temptations and opportunities these regimes were/are giving them. Taking the Swastika or whatever which flag up a mountain is obediently done, for the sake of a bag full of strong German Marks or Dollars that makes the expedition possible. Even shaking hands with the Führer did not cause any moral dilemma to some alpinists (though later in their biography some 'forgot' to mention these 'youth sins'). Reading the history of alpinism we easily discover that many of the most challenging mountains where concurred 'for the glory' of autocratic regimes: Eiger-NF being on of the most famous of them all.

Maybe less spectacular, but outnumbering by far the participants to these expeditions, is the specific use and integration of OS in the education of young people by these perverted regimes. In order to turn their blond boys into 'Übermenschen' the Hitler-Jugend, the Nazi youth organisation, practiced outdoor sports (together with athletics and other Olympic disciplines) under the motto:

'Was nicht Tot macht, start macht!' (If it does not kill you, you'll come out stronger). The message was clear: only the strong are worth living.

This (mis-)use of OS, and our beloved alpinism, is at the same time repulsing and fascinating. Those who have seen the movies by Leni Riefenstahl[3] understand what I mean.

This is all history. They say ideologies have lost their meaning. Nowadays the paradigm of endless consumership rules the globalised world. So, ideologies do not matter any more...?

I think they still do. And even though they may be more implicit than ever before, some ideologies even keep on prevailing in the world of OS.

It is clear that even in the modern mountaineering, where most of the actors still are men, we seem to keep on being very much attracted to the above mentioned heroism, mysticism and machismo.

Very recently I overheard a mountain-guide using the old Hitler-Jugend slogan ('Was nicht Tot macht...!') to motivate a client. I could see at the look of his face that he was not joking...

And only yesterday I read in the flight-magazine of CSA an interview with the famous CZ Himalaya climber Josef Rakoncaj: 'Women can't endure as much as men. And anyway, a sweaty woman in mountain climbing gear – nothing feminine in that'. Who other man, but an alpinist, dares to speak such discriminating words in 2005?

But, lets look a the 'normal' alpinists. Ever heard them telling stories when coming down from the mountains? You might not hear much about the nice flowers up there, nor about a beautiful sunset, but more about the extreme steep rock they had to climb to 'concur' the summit[4] and the bitter cold they had to endure (and survived, of course...) to see the sun rise.

And, let's do some introspection: how conscientious are we, modern adventurers, when it comes to get sponsoring for our ambitious projects? Would we reject the Euros from a bank we know it invests in splitter-mines? Do we mind paying dollars to a corrupt and dictatorial regime, if only we can get access to 'our mountain'?

In OS today prevails the image of the super healthy, strong male, always ready to perform and in for new kicks, seeking endless fun in every activity. 'Fun' is the message; 'OS' is the tool.

Do we want to give in to that?

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[3] Leni Riefenstahl (1902–2003), German actress and movie-director, that produced romantic movies about mountaineering (f.i.: 'Die Weisse Hölle vom Piz Palü, 1929) and propaganda movies for the Nazi-regime (f.i.: 'Mythos Olympia', 1938). In both her romantic as in the propaganda movies, she glorifies the supremacy of the virile males and the fascist machinery they take part in.

[4] Sir Edmond Hillary, in the Everest-base camp, before he set for the final 'assault' to the summit : 'Let's go and beat the bastard!' Sound far from 'the joy of mountaineering' to me...

We can. It is for sure the easiest way to be successful (and make money) in the OS business.

Is it that what we want?

Do we as a university choose to educate our students to fit in this OS-consumism?

Do we as an organiser of OS-activities make our participants/members step into this endless competition of more fun, more excitement, more summits, higher summits, faster...?

It is up to us to decide.

In Friends of Nature, we made this choice. There was already a clear ideology behind the founding-ideas of Friends of Nature.[5] At the beginning of the 20th century they started in Central Europe as a movement to make it possible for working class people to enjoy nature. They build huts in the mountains and organised outdoor activities (in nature around their huts). 'Berg Frei!' (Mountains Free!') was their motto, the shaking hands and the flowers the symbolic expression of the values they stood for: 'brotherhood' and 'love for nature'.

Over 100 years society has changed a lot, people have changed, their needs have transformed into new aspirations. So, Friends of Nature too have evolved in that society. They grew to be a (world-) wide-spread leisure-time organisation, still using OS as a very important tool in their educational work and even developing their own way of organising OSE.

As I promised in the beginning, I will here not focus on methodology of our work: this particular way of organising OSE in Friends of Nature was illustrated in last years' Symposium. You can read about it in my contribution in the 2004' Proceedings. I only want to stress, that Friends of Nature still are very conscious about 'why' they use OS in their educational work. Of course the thousands participants in the activities all over the world have 'fun' in the outdoors! It is a leisure time organisation, after all. But, at the same time, in every single activity, the two core values that still show in the symbol of the 'hands-and-flowers' keep being present:

- building up a sustainable relationship with nature
- building up friendship, solidarity and social justice among all people.

These values mould our work and make us rethink again and again: 'why?' and thus 'how?' we (should) organise our activities. And it shows. Only last year the IYNF (International Young Naturefriends) made a research[6] tackling the questions

[5] A more detailed history of the International Friends of Nature Movement can be found on: www.nfi.at (website 'Naturfreunde Internationale'; German/Enlgish/French) www.iynf.org (website 'Internatinal Young Naturefriends'; English)

[6] An extensive report on this research you can find in the Gotcha-handbook : 'Attractive Youthwork, a guide to make things happen', Prague, 2004, available at IYNF

about why people join their activities, what makes them attractive, what they enjoy in the activities of the Member Organisations. The answers showed clearly that (young) people did join the activities (most of them OS) because they 'are fun'. But also, that during the activity they experience these activities are more – and thus different than in other (sports-) organisations: participants express that they can feel those values of 'friendship', 'social justice' and 'sustainable relationship with nature' in the activity.

This is one of the reasons why we on believe that we are not only different from any other OS-organisation, but also that we do 'make the difference'. Maybe the introduction question 'Can OSE save the world?' was too big to answer. But in NF we on believe we can make a contribution. At the same time, we, as any organisation, must keep on reflecting, upon our aims in the first place and from there upon our methods.

That's why we are happy to be partner in this Conference. A 'conference', a meeting like this, contributes to making our educational work in the outdoors better, of higher quality, more effective, considering our aims.

We are looking forward to these days of reflection together with you, OSE specialists from all over Europe. Let's exchange our experience, discuss about our research and ideas, reflect on 'why' and 'how' we organise OS.

So, on behalf of the International Friends of Nature, I welcome you very much on this Hruba Skala – Conference and invite you all to join us in our reflection.

References

Aufmut, U. (1996). *Lebenshunger, die Sucht nach Abenteuer*, Zürich, Walter Verlag.

Hunt, J., Sr. (1953). *The Ascent on Everest*, London, BMC.

Jarvis, P. (1995). *Adult and Continuing Education*, Theory and Practice, London: Rontledge.

Kolb, D.A. (2001). *Experiential Learning Theory Bibliography 1971–2001*, Boston.

Messner, R. (1997). *Berg Heil – heile Berge?*, München, BLV.

Meulenbergs, W. (2004). *Friends of Nature and OSE – an adventurous and sustainable relationship*, in OSE, Proceeding from the International Symposium, Prague, Charles University.

Neuman, J., Turcova, I. (Eds.) (2005). *Outdoor Sports Education, Proceedings from the International Symposium*, Prague, Charles University.

Pilz, M. (2005). *Berg Frei – Mensch Frei – Welt Frei? A chronicle of the International Friends of Nature Movement*, Vienna, Austrian Friends of Nature

Pfaff, N., Pearce, T. (Eds.) (2005). *Attractive Youthwork, a guide to making things happen*, Prague, IYNF.

Simpson, J. (1997). *Dark Shadows falling*, London, Random House.

CLIMBING IN YOUTH ORGANISATION: CHALLENGES OF SPORT CLIMBING WITH YOUTH WORK

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Keywords
Youth work, programming, non-formal and informal education, climbing and mountaineering

Youth organisations significantly differ from sport associations in number of characteristics. Yet, as sport and physical health is increasingly valued in the society, they might share with them some elements of their programme – many youth organisations start using especially outdoor sports.

However, the traditional sport programme often clashes with the genuine principles of youth work as developed over the course of 150 years. If climbing is to become an integral part of programming of youth organisations, it needs to be practised in different way than in sport associations. The article will develop... challenges that lie on this way.

Youth Organisations

Let's do a little intellectual exercise and imagine an abstract youth organisation based in the Euro-American civilisation region. If we examine this example, we will find features that characterise in some way any youth organisation regardless its name, country of residence or size:

Membership and long-term commitment – all youth organisations are membership based and often in their respective languages describe themselves as 'associations'. Despite the fact that many 'receivers' of the youth organisations' services are un-organised children and youth, it is the members, who make the basis of these organisations.[1] The youth organisations also tend to involve its target groups for a rather long period time – the youth work is long term and systematic.

Small group context – majority of organisations provide their youth work in the context of small groups – in contrary to mass activities of different formal institutions or individual practice of youth advisors. Regardless the size of the group, youth work always happens in group format. (Smith, 1999, 2002)

[1] In this respect we need to differentiate between youth organisations and youth agencies (clubs, centres, institutes), which work is usually delivered by a team of paid staff. Sometimes youth organisations establish their professional youth agencies, but these two types always remain separate.

Voluntarism – even though youth organisations sometimes employ members of staff, it is volunteers, who deliver the vast majority of all work done in the organisations. Paid staff is usually only responsible for the administrative jobs or supports the educational work of volunteers.

Focus on general education – although youth organisations differ in programming they employ, their common aim is the education of children and youth as human beings, sometimes phrased as 'personal development'. As a supporting statement, we can cit bits of mission statement of two organisations on opposite sides of spectrum of youth organisations – Scouts and Falcons:

The mission of Scouting is to contribute to the education of young people (...) to help build a better world where people are self-fulfilled as individuals and play a constructive role in society (www.scout.org).

International Falcons will undertake it's educational programme to ensure that it's members develop a co-operative outlook that encourages a critical awareness and self reliance (www.ifm-sei.org).

To illustrate, how Young Naturefriends define its educational work, we can cit their mission statement as well:

Young Naturefriends promote the ideals of sustainable development, a socialist democratic society and the personal development of young people.

Inclusion and Participation – the real practice might be sometimes questionable, but majority of youth organisations tries to be as inclusive as possible – involving youth members from all social layers, races, religions etc. As a significant feature of youth organisation we might state the continuous attempts of youth organisation to serve as a flow-heaters of a kind – to invite youth members to **take part** in all kinds of work that the organisation might offer – be it organisational, educational, project oriented, decision making, representing etc. Using famous Lincoln's citation, youth organisations are not only run **for** young people, but also **through** young people and **by** young people.

Value-based practice – **all** youth organisations have developed certain code of values that underline their everyday practice. The role of such code is different in each organisation – some practicing it to a great political extend making the values a strong issue in the organisations' agenda, some working with values on a level of basic principles of their educational youth work – but all of them defining it and being aware of it. (Smith, 1999, 2002)

Networking – linked with a previous feature there is a point that we might see at most of the youth organisations – creating strong and wide international networks, usually according to the values and aims that each organisation preach (only rarely these networks are based on the programming similarities).

As a result of previous points we can conclude, that youth organisations are, as a whole, characterised by the principles they are based on rather than by their

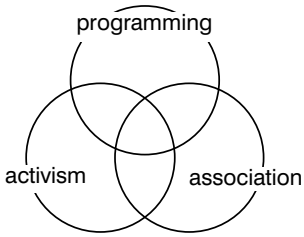

fig.1: activism, association and programming

structure or programming. Following this list of rather detailed characteristics I would like to propose following model using three pillars to describe a nature of youth organisations.

In my opinion, a youth organisation, or youth work more generally, is a result of a crossover of three worlds (fig. 1): activism, association and programming. (Pohanka, 2005). Since its onset in the middle of nineteenth century youth work has never been 'politically' neutral, without a clear connection to a certain set of values. YMCA, the first big youth association and scouts, the first youth mass movement have been affiliated with Christian code of ethics ever since their establishment (YMCA in 1841), other youth organisations tend to incline to socialist ideology of social justice and equality. Youth organisation commonly share passion about the world being possibly a better place to live on – with each organisation's specific point of view what does that mean concretely – and in the same time perceiving themselves as those who should contribute to such a better world. This unifying element can be phrased as a question: "what do we stand for?" or named in my triplet of circles (fig. 1) as **activism**.

Association suggests that youth organisations are defined by its membership. Unlike youth agencies where staff (or volunteers) serve (work with) others, in youth organisations youth serve (work with) themselves. With a little bit of imagination we might see youth organisations as a contemporary form of tribes, where young (and not only young) people associate themselves for good sake of being together in a group. Such group, of course, especially if lasts for a long period of time, develops its traditions, rituals, speech, heroes and myths, the feeling of those 'in' – in contrary to those 'out', as the real ancient tribes once did.

The third world defining youth work is **programming**. Programming, as introduced by S. Priest (e.g. in: Priest, Gass, 1997), means a deliberate use of programme measures to reach a specific change. In the context of youth organisations I mean by this term activities and programmes that the staff, volunteers, leaders and educators of each organisation employ in order to fulfil its purpose of existence – reach the specific change. It is characteristic for youth organisations that they choose their programming rather flexibly, according to current trends in

society and only in rare cases include the specific type of their programming into their self-definition. The reason for presenting this contribution at the conference dedicated to climbing and mountaineering is that currently my organisations, young Naturefriends, tries to incorporate climbing – a sport – into its programming. First I would like to show that despite using sport as a part of our programming, we don't become automatically a sport association.

The difference between youth and sport organisations

We can use the above presented model of three worlds of a youth organisation to understand how crucially dependent are they on all the three mentioned pillars. If we remove the pillar of Association, we will get a youth agency and if we remove Programming, there will be an advocacy organisation instead of a youth organisation.

For the topic of this article I would like to examine the importance of a pillar of values. If we remove it – the pillar of Activism – we in some cases can still get a youth organisation, however, I bet that it will be either unstable and weak or becoming slowly something else. For me, a sport association is a typical example of an organisation without a strong pillar of values. I don't suggest that sport associations declare absolutely no values, but it is not part of their definition.

While principally all international youth networks state boldly their mission statement at the display windows of their websites, you cannot find any such proclamation at the site of FIFA (www.fifa.com), only several objectives in the statutes stating basically that football needs to be protected and developed. More closely to the conference's topic, UIAA claims (www.uiaa.ch) that its initial specific tasks were agreed in 1932 to "encourage mountaineering for the young, develop international standards, raise awareness about safety, and protect the environment" which is again only a little more than development of the programming.

The following table explores more closely the various differences between sport associations and youth organisation given both of them use sport as a method of their programming.

Climbing as a method of youth work

Following the conclusion of previous parts it is clear that sporting practice of youth organisations must significantly differ from the practice of sport associations that focus at performance and competition. It is necessary to look for other sources of inspiration of delivering climbing and mountaineering in the context of youth work.

Early notes of use of climbing as an educational practice we might trace to records about the work of Outward Bound schools in Northern America in sixties of the last century. Rock climbing, or rather, some bits of its methodology, proved useful for its adventurous nature for the purposes of experiential education, devel-

	Sport associations	Youth organisations
Main focus	Competition and performance	Cooperation and development of each one's potential
The wanted effect of programming (sport)	Development of physical skills and abilities	Overall personal development (both physical and mental) and development of interpersonal skills
Methodology	Training of skills and abilities, competition	Training of skills and informal education
Role of youth	Trained for maximum performance	Co-creators of the programme
Role of sport	Main focus on development and promotion	Tool of reaching other aims
Role of trainers	Full responsibility over the programming with the aim of development of sporting potential	Experts in skills training and partners in informal education

table 1: Differences between sport and youth organisations from the perspective of using sport as a method of programming.

opment training and later also adventure therapy as developed by Outward Bound and it's many followers worldwide.

Adventure programming and adventure therapy literature refers to basically only two kinds of programmes used in educational, development or therapeutic context: rappel, usually in several steps with growing difficulty of terrain and top-rope climbing easy routes (around III – IV in UIAA scale).

We can't than admit advantages of rappelling in 'challenge or experiential education'. The rappel provides great opportunity to a) show and let participants handle a quite sophisticated technique, b) overcome natural fear from height (especially up there at the edge) and c) develop certain trust to one's mates and received equipment, d) give participants a feeling of control over (seemingly) dangerous and difficult situation. I am sure that this list of possible benefits is far not complete. The advantages for instructors lie surely in a) very (!) safe environment, b) having a full control over student's health and well being during the whole activity, c) nature of rappelling that doesn't require almost any special skills (other than basic neuromuscular coordination).

Top-roping is slightly more difficult than rappelling in both the techniques and physical abilities required but if the route is well chosen and belaying well and carefully trained, then benefits and advantages are very similar to those of rappelling.

Can youth work employing climbing depart from this practice then? Is the model of experiential learning using one-day scheme of exposed experiences suitable for a long-term and systematic work as practiced by the youth organisations? I would not agree.

The potential of the mentioned methods of rappel and top-roping for the experiential education lay clearly in handling the novel environment and unknown situation. But all climbing instructors are aware that even beginning students perceive the rock as a familiar environment, and rappelling and top-roping as well-known activities already the third day of a climbing course. The focus shifts from handling the situation to improving the technical skills. Challenge moves from being able to cope with being exposed to a height at a rock face to managing more and more difficult routes with higher and higher elegance.

Clashes of sport and youth work

It was shown that sport associations use sport in completely different context than youth organisations. Further, the practice of institutions in the field of development training doesn't provide appropriate source of inspiration for youth work either. Therefore I conclude that we need to develop suitable format of using outdoor sports, namely climbing and mountaineering, for long-term, systematic, educational, value-driven and aims-oriented youth work.

I would like to propose three plus one crucial clashes that need to be dealt with if climbing is to become the educational practice of youth organisations:

1. Natural focus on performance vs. inclusion and opening opportunities

What I observe in a local group, which I am member of and which focuses entirely to climbing, is the natural focus at the performance of each one of us. The discussions often turn around the difficult routes we still need to climb, around training of strength and technique... I can also observe that our members, who joined the group in expectations of a nice sport and who are not that successful in managing it, tend to lose motivation. On the other hand, some of our members, who enjoy a big progress in their climbing skills, tend to leave as well because they want to get to a group that would fit their level of skills better. The same experience I have from our international camps, where the performance of various participants occupies a great deal of evening's conversations. Climbing, the intense conversation with the rock (or the climbing wall), gives very direct feed-back about one's performance and unlike other methods of youth work, shows too brightly who is good in it and who is not.

Where is then the proclaimed inclusion and focus at each one's individual potential despite their level of technical skills? Can it really be maintained if the group

gets too variable in their skills? I dare to say, that climbing as programming will proof short in this respect.

2. Individual or dyadic approach vs. group work

We see that climbers associate into clubs, and not only in order to have access to insurance or lower rent price for materials and topos but also in order to belong to a group. One climber told me once at the top of a rock: "it's great to be a member of a club, you can call names to the other clubs." Yet, if we look at the programming of such group – there is just some planning time, climbing time and then reflection time. The core of 'what happens in a base camp' – and therefore in a group – is just a reflection (or planning) of climbing. We hear famous heroic stories, sometimes shit stories, sometimes scary stories or we plan for the next day(s). The group is just doing climbing (as individuals, or couples) or discussing it (as a group). There is no (or very little) of a real group work.

Climbing (or mountaineering) is simply not a group activity; it is almost by definition an individual pursuit. Even though it is very rarely that there is a climber really alone at the rock face (a partner is almost for sure within a reach of maximum 40–60 meters), when it comes to climbing "at the edge" there is just no one else, who matters. Just me and the rock. I don't suggest that climbers are individualistic people who never hang around with other mates – on contrary, but as we can see – the time, when they are really together – as a group – is always in non-climbing time. So if we in the framework of the youth organisation want to work, to **do** something (not just discussing climbing) as a group, we can have a hard time – we make our climbers spend less time at the rock, we go against climbing as a programming.

3. Competence building vs. informal education

Climbing as a an activity requires a whole lot of technical skills and competencies – skills that need to be trained, developed and maintained throughout a long period of time. This agenda can be so rich, that it can effectively occupy the entire agenda of the local group. And while the general aim of a youth organisation is an overall informal education, the local group focused on climbing, if being busy only with the competence building, can actually be no more than an amateur version of a team of sport climbers – focusing only on skills, just at a lower level.

The extra one: Use of nature vs. environmental awareness

It is likely due my organisational background that I feel the urge to raise also this clash – however, it might not be the case for all the youth organisations. For climbers – and specifically for sport climbers – the rock face is not much more than a challenge of their skills and physical abilities. It is a challenger who puts the climber's performance in question, an urgent teaser to be overcome.

It would be naive to think that climbers from youth organisations think about the rocks in a very different way. The urge of a perfect line at the rock is no less appealing to them than to any other climbers. Climbing – as a sport – doesn't require from a rock anything else than just to be a place to climb on. And from climbers the sport requires just a will and abilities to climb it. Climbing is not ecological – it doesn't require to think of the rock as a place in a context.

You might argue that climbing associations and alpine clubs spend a lot of money, time and resources to actually protect the rocks. Well, sure. But is conversation really the end of ecology?

I believe that a youth organisation needs to go further beyond the climbing experience (on a well preserved rock) – we need to prepare conditions for environmental experience. I see a big difference between using the rock and increasing the environmental awareness – a life approach that goes beyond just not using chalk on sandstone rocks or leaving liver under the rock face.

Can it be then concluded that climbing, as programming, is just incompatible with the aims and other characteristics of a youth organisation? Does automatically use of climbing in the youth organisations transform them into sportassociations?

Clearly, youth organisations, when they decide to use climbing as a (main) part of their programming, they face a challenge of being still the youth organisation – also because of the nature of climbing as a sport itself.

What can we do to stay youth organisations and be doing climbing? If we want to provide a good answer to this question, we need to go back to what a youth organisation actually is – an intercept of worlds of association, activism and programming. Even a climbing club of a youth organisation cannot forget any of the three worlds to be mixed in its own cocktail. In other words: keep on being the youth organisation. On addition to that I would like to propose several opportunities that we, as youth organisations have connected with climbing.

Youth trainers not sport coaches

First of all one thing must be clear – it can't be sport coaches who lead the youth group – it must be youth trainers. Youth trainers in the climbing youth group have a difficult job though. They must be:

- excellent climbers themselves (need their own continuous sport training),
- good teachers of methodologies
- organisers
- youth workers in the best sense of the word

I believe that only cross-over training can secure needed competencies of the youth trainers in climbing groups – only youth work training and sports degree can make the deal.

Broader programming

Being a youth organisations is much more than building competencies of our participants and members in order to make them to deliver the highest possible performance, neither is it just a common recreation together. My conclusion is then that climbing can never be the only point on programming agenda of a youth organisation, however it might be the main one.

In my organisation I see that despite we all are climbers by both body and soul, a poetic evening or common visit of theatre play has the same appeal for our members as an OS VIII, I dare to say that to many even greater. Our climbing trips never stay just the climbing – we purposefully include other programming methodologies into the agenda in order to provide what exactly makes a youth organisation to be a youth organisation – overall informal education.

Having this agenda can at the end be also a strong point of our PR to the potential members – it is not just about climbing here, we are more than climbing freaks.

International context

Youth organisations being in many cases parts of big international networks and umbrellas can offer to their members a unique opportunity to spend their leisure time in an international context. From our good practice from cooperation with Belgium Naturefriends I can say that despite the programming already being in an international group brings a lot of nice educational opportunities. I am absolutely sure that opportunity to use foreign language in living environment is for many people as appealing as the climbing itself.

Inclusion

We can see every day in stuffed climbing halls over whole Europe that climbing is not only for the 'single-finger-pull-uppers', 'long-roof-hangers' or 'very-tight-shoes-wearers' that start somewhere at VII UIAA but also for hosts of normal people who keep on struggling in grades IV–V without realising any significant progress. Isn't it a best proof that there is a need to open youth clubs for the ever-beginners? I already tackled above this dilemma – what a youth group can do to keep the cohesion of a group with different levels of performance? I propose: keep on reminding the principle of inclusion to the trainers – the level of performance cannot make difference in the motivation of youth group members. Opportunities for all members must be created and maintained – and that is a work of trainers.

Connection with values

A youth group that forgets about the values it is built on is on the way to become a sport club or entertainment centre or on the way to dissolution. The limited space doesn't allow to explore programming possibilities that can actualise the values of

the group, however some of the possibilities comprise: module of values in training of trainers, development of a code of ethics and facilitating "political" discussions among group members.

Conclusion

We have to admit that climbing as a programming of youth organisations is attractive and healthy way that might reply to needs of many young people. However if the youth group that decides to use climbing as the main point of its agenda doesn't want to become a sport club it needs to stay in touch with the primary principles of youth work and use opportunities that it has as a youth organisation.

References

Pohanka, O. (2005). What can we learn from adventure programming. *Variety* 1/2005, International Young Naturefriends

Priest, S., Gass, M.A. (1997). *Effective leadership in adventure programming*, Human Kinetics, Champaign, IL

Smith, M. K. (1999, 2002). *Youth work: an introduction, the encyclopaedia of informal education [online]*. Last updated: June 2002, [cit: 2005-11-10]. www.infed.org/b-yw.htm.

CLIMBING GAMES

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WHY play games?

Besides the fun one can have by playing, playing games on the climbing wall or on rocks can be very useful in the initiation of aspirant climbers. Think of Jan Amos Comenius who supported the use of games to achieve educational purposes. These purposes can be warming up physically and mentally, learning to know the tools and the wall or rock, realising certain technical objectives such as for instance equilibrium, etc. While playing you surely also create an enjoyable atmosphere. Your participants can feel a first Csikszentmihalyian 'flow' in their climbing carrier!

HOW to play games?

In a safe way! It's very important to inform the group about the three safety rules for climbing games before you start playing:

"Never climb higher than the limit" – point out a limit somewhere between 2,50 m – 3 m, depending on the age and the underground (mats, sand, rock...)

"Never climb above another climber"

"Always climb down to leave the wall" – jumping is dangerous, certainly if there are no mats!

WHAT games can you play?

There is an endless number of games to play, because everyone has his or her creativity to discover new games. However, to give you some inspiration, I'll give you a survey of categories of games. The first four categories are taken over from Oliver Aha and Marc Wiehl's CD-rom "Klettern, spielend lernen. Sporthalle, Kletterwand, Naturfelsen" which you can order on www. Sportundgut.de. The other categories were brought to mind by the practice of the games within the IYNF.

Handicap games

As the name suggests, you can give a handicap to your aspirants: you can take away the use of some senses or parts of the body. Let them climb with blindfolds, gloves, backpacks, balloons, with only one hand or leg, with only 4, 3 or less fingers, and so on.

Skill or capability games

In this kind of games you give your aspirants an extra task. Make them draw, write (it's big fun in an international seminar or camp to write words in a language you

don't know!), dress or undress extra clothes, catch things and throw them back, collect or hide cards or other things, crawl through a hoop. More climb related tasks can be turning around (more experienced climbers succeed in turning around 360º over the head!), roping on, clipping in etc.

Partner games

You can let partners transport things, pass each other, climb with arms or feet of both persons tied together or with a balloon to hold between them (difficult, believe me!). Other exercises can be shadow climbing (one climbs exactly the same way as the other) or pointed climbing (one points out the grips the other one has to use). Most fun in this category however is generated by catch-and-pursue games!

Guiding games

Guiding games are games in which you lead your pupils. Of course, climbing a route is possible here, but you can also let them follow a line (use a rope or chalk), let them climb between or outside two lines, etc. You can also number some grips and let them search possible 'codes'. Often done is this technical exercise: hang an eight on a schling in the middle of the climber. Let him make a traverse while the eight must stay between his legs or may not touch his feet or legs.

Team games

You can also devide your group in teams. Let them choose a suitable name and spell the name with their bodies on the wall or make a tableau vivant. You can chronometrate the time a group needs to pass things or make a traverse with the whole group.

Material games

These games we use within the IYNF to initiate the aspirants in the material used for climbing and some practical skills. The possibilities are endless, but for instance, you can do a rope pulling contest with 2 teams. You learn them how to put on a harness and how to make a prusik knot. Then you let them tie theirselves to the rope and let them pull without using their hands. After the contest it's good to give the groups feed-back: "Now you felt how strong such a harness is and how you can use such a prusik knot, isn't it?"

Before rope pulling it's important that your aspirants are warmed up. You can use some simple running games. Why not let them try to conquer for a schling as trophy. And when you explain the game, you can say the things they have to know about schlings.

Round games

The last category of games, more used to train advanced climbers, are adapted

round games. You can easily fill a whole climbing session with only one game, like for instance gooserace, naval battle, master mind, scrabble etc. Invent suitable tasks for any training purpose you want to achieve. If you want to train technical skills, let them for instance climb a route with one technique or another as they throw that number with the dice. If you rather like to you have an endurance training: well, every time as they shoot in the water in the naval battle, they must climb one route on their level, or two on their level minus 1 degree, etc.

References

Beroujon, Y; Gachet, C.; Matera M. et.al. (2001). *Jeux en escalade. 47 jeux, avec et sans matériel d'escalade,* FFME, 139 p.

Melskens, F. (2003). *Sportklimmen, spelen met evenwicht.* Zeist: Luiting, 153 p.

Winter, S. (2000). *Sportklettern mit Kindern und Jugendlichen (Training für Freizeit, Schule und Verein)*. München: BLV, 154 p.

Aha, O.; Wiehl, M. (2003) [CD-ROM] *Klettern, spielend lernen.* Sporthalle, Kletterwand, Naturfelsen.

http://escalade.camptocamp.com/article195-10.html

http://ibelgique.ifrance.com/jeux-escalade/jeux.htm

http://www.indoorclimbing.com/climbing_games.html

http://www.passemontagne.com/en/climbing_8910.html

CLIMBING OF BLIND CHILDREN

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Abstract
Sport and movement activities are very important for psychological and social development of blind people. Climbing is a wide spread sport activity for healthy population and now also for the blind. Climbing of blind children has a lot of specifics different from healthy population. It puts heavy demands on adaptation of the blind to the environment of an artificial wall, basic climbing skills, sense of touch instead of sense of vision, etc. Climbing improves defective posture – so-called 'safety stance', which is mostly normal posture of the blind children.

Keywords
Climbing, blind, artificial wall, adaptation.

Introduction

Sport and movement activities are very important for psychosocial and physical development of blind people. Climbing is a wide spread sport activity for healthy population and now also for the blind.[6] Climbing is one of a lot movement activities which contribute to socialization and development of the blind people.

Development and incorporation of climbing into learning process in schools and out-of-school organizations is supported by raising climbing popularity, building new climbing walls, research on climbing as physical development and compensation exercises.[3,4] Popularity of climbing is also influenced by understanding of climbing as an adventurous activity with risk. Attractivity of climbing follows from a big interest of children to try climbing.[1,5]

Physical education (PE) is very important as a subject for blind children. PE brings conditions for a harmonic development of physical functions of children. Above all is it the right posture, right movement habits, right coordination of muscles and motivation to the movement. Also right muscle relaxation and keeping and increasing physical condition are important.[9]

Aim of contribution

The aim of our contribution is to present basic knowledge and experiences from long-term cooperation and organization of courses for blind children. We focused on differences in climbing between blind and healthy children, what is specific about climbing of blind children.

Safety and organization on the wall

Analysator of sight is the most important orientation and coordination organ for movement in the environment. So orientation of blind is dependent on perception of hearing and touch. The sense of vision is not possible to substitute fully, even though there is a compensation of the other analysators. Therefore, there are some differences in the learning process of motor skills and the development of motor abilities.

In climbing it is very important to know true health condition of the child.

An individual could be contraindicated by strong movements or shock, fast lowering, falls by leading the route. There could be higher inner eye pressure and hyperaemia of vessel bed during these activities.

A gym with an artificial climbing wall is an ideal place for basics of climbing. It is spacious, does not limit the movement of blind children. Safety rules, not only for children (healthy and blind) but also for teachers (instructors), is to keep the gym clean and put back all used thing immediately.

For many children is the climbing wall something new and strange. The first thing what we have to do when we come to the wall, is introduce children to the wall and describe them the wall. For totally beginners it is good to start with the learning process under the wall on the floor. With the blind beginners we start the climbing process through the form 'climbing with healthy children'. The blind have often problems to keep stable position and stay on the wall when climbing. We support the sense for that by talking to them. It is also good to accompany the blind on the wall when climbing. It enables us a constant contact with the blind child. It makes communication easier too.

Characteristics of climbing of the blind

We try to optimize the learning process maximally through organization, using teaching aids, choosing right concepts and methods etc. The result of motor learning should be as close as possible to the outcomes of the process of healthy children.

Firstly, we have to set the aim of our process and realise whether the blind children climb to incorporate among healthy children, to loose shyness, to overcome themselves, to get their motor abilities better or climbing skills etc. Toward this aim we focus the whole didactic process.

The goal of the first phase in teaching climbing is the adaptation to the environment of an artificial climbing wall and also to conditions of motor learning – orientation in the environment of the climbing wall, leading style of the climbing teacher, and contact with the other children. The goal of the second phase is to learn basic knowledge and skills of climbing.

Games are very helpful when teaching climbing skills. Among games we include also some competitions, which support motivation of children, develop endurance,

accuracy and speed. And we also develop strength, balance, dexterity, courage, tactics and creative.

The law of effect is also valuable in the climbing process of the blind children. It is important to be satisfied, feel success of our exercise and effort. The faster and more effective the success will be the bigger interest will be in the futher learning process.

The visual stimulation comes the first during climbing. The climber sees the hand holds and foot holds, perceives their shapes and configuration. The visual stimulation is followed by the motional stimulation. The motion is led in the direction which climber chooses by his sight. A hand is heading to the chosen hand hold. But this rule is not valid for the blind climbers. He could not think in advance where to go. When the hand touches the wall or the hold, the stimulation of touch is applied. The climber feels a shape, cold, warm, crudeness or wetness. The healthy climber extends the hand automatically according to the shape, location and size of a hold. For the blind climber this task is much more difficult. He could not see the shape of the hold, so he can put the hand to the ideal position after feeling it.

On the other side the blind climbers have an advantage in their stronger feeling of touch. Their ability to find on the smooth wall the possibility for holding, is for us healthy sometimes incredible. The health climber rather stretches out his hand for the better hold, instead of holding a small one. This is only possible when you can read the route beforehand. If we do not give the climber any advice, that there is a better hold, he has to do it with the small one. Often he has no strength to find a better one. So he gets used to small holds faster than healthy climbers. They are also able to identify the exact shape of a hold by touch very well. They have also better perception of the wall structure. They look like copying the wall, the whole wall goes through their hands. They can perceive the wall, 'see' it. So if the blind climber says, that he knows how the wall (route) looks like, he means it.

The blind climber has to always spend more energy, effort and time than the healthy climber. The same route climbed by the healthy and the blind one is not the same. It is more difficult for the blind one. Due to these differences the difficulty scale increases more progressively for the blind than for the healthy.

Differences in climbing of blind and healthy children

It is important to adapt the child for the new environment of the climbing wall. Than he has to adapt to basic climbing skills, new sounds, contact with other children and learn how to speak the 'climbing language', etc. The more perfect the adaptation on environment of climbing learning process is the faster is following process of motor learning. Begginers have to get control over unpleasant feelings – related to percepting and experiencing the specific environment of the wall, climbing, movement in hights, which is different from the blind 'normal'

live environment. It is necessary to continue with adaptation to the point that beginners are able to ignore the unpleasant feelings and concentrate on filling the learning tasks. The child needs time to get a trust. We do not need to hurry with any activity.

Children make pairs, where one is healthy and one is blind. It is not possible that there will be two blind climbers at the beginning. In the group of climbers where we did the lessons, we gave the children possibility bring with them their healthy friend or brother or sister. We suppose that for cooperation of the climbing pairs is better, when both know each other. It is not really necessary to know the colleague, but at least they have to know how to behave and how to work with the blind.

When teaching blind children the method of touching the wall is well-tried. The blind child can 'see' through hands. Therefore, it is helpful if the teacher takes up himself into position which he wants to teach, child has opportunity to „see" him by hands, to feel him. He can find out how the sole should stand on the foot hold or how to catch the hand hold. He can also touch and feel the exposure of knees, trunk and pelvis. This method can look strange for the healthy but we find it useful for training the blind.

Before each climbing lesson children have to check themselves and then one another. At first, the healthy one checks himself if everything is OK with the harness – position on the body, buckles, knot or the position of the rope in the belay device. Then he checks his colleague. The same control makes the blind by himself. He makes this control by hands. After proper training even the blind can realize if the rope is tied in the right way and can also know several types of knots. He can also check the right position of the waistband in the buckle. The blind child does not check his healthy friend by hands, he has to check himself. Before climbing the teacher checks both of them. It is important not to be in a hurry during these preparing activities. We mentioned that the blind children checked themselves much more consistently than the healthy. The reason is that the blind child realizes that the only control, that everything is OK is only his touch. During the climbing process we tell the healthy children to use also hands for the checking. It is good if the blind finds a problem by checking and corrects it himself.

In the beginning of belaying practise teacher stays by the child. The teacher is watching how the child belays. If any difficulties appear he can give an advice. So his role is the second belayer. Belaying could do also the blind but only 'top rope' belaying and after consistent and long-term practise.

If there is a difficult move in front of the climber, he says to the belayer to keep attention to him. Belayer has to react to that with fuel concentration and expecting a possibility of a fall. If the belayer is blind it is necessary to inform him about everything from the climber. It is good to report about the climb, if he needs slack or to tight the rope.

The belayer has to say to the blind climber, that he is close to the floor. The blind knows that he is over the floor thanks his orientation by hearing. But still communication is the base, so we keep it all the time. Lowering is done slowly and fluently.

There is a tendency of healthy children to belay the blind children too tight. It means that the rope is straight too much. It probably hides an effort to help the blind partner too much. But the blind climber feels it like a stress factor. He feels it like 'come on', 'hurry up', 'let finish the route'. The blind starts to be uncertain, he does not want to keep the others long. There could also appear another reaction of the blind – giving up the route. The blind child thinks that he is not so good, so he sits into the rope even though he has strength enough to continue. This second reaction is major, it can cause the feeling that the child can not continue with the climbing learning process and stop with climbing.

The learning process of the blind child takes for 1/3 longer time then with the healthy. We have to keep it in our mind, if we prepare the climbing process.

Climbing improves defective posture – so-called 'safety stance', which is mostly the normal posture of the blind children. They have to be ready all the time for new incomes from the enviroment. They are alert. That is the reason of their posture. The muscles are in different contraction and tension, what is relaxing for them is different.

Climbing is succesfully used in physioterapeutical clinics.[2]

It needs futher research.

Process of motoric learning of climbing skills

When training climbing skills and climbing techniques we have to explain and describe everything at first. We can not use sentences and words, which are imaginary for the blinds. They can not imagine anything under these words. We describe the activity in detail to the children and then we do this activity so that the children can enjoy and feel the activity through touch. We try to approach the activity, so that the child can do his image through his accessible impulses – hearing, touch and proprioreceptors. For the first image of an activity it is very appropriate to use the form 'leading the movement' and 'help by doing the movement'.

Memory movement images are created by repeating the same route, the same movement principles. The blind climbers have accurate memory movement images and also ability to remember position of the holds. By repeating the same route the climber heads to the holds very precision. That is ability of the blind climbers. The touch is their eyes.

They could firmly remember, how fare and where the holds are and where they have to find them. The healthy climber is using during the climbing sense of vision. But the blind is using touch and create his memory path better, long lasting.[7]

It is good to climb different movement colourful routes to enrich the remember movement tracks through new movement acts. Talk to the climber and give him advice helps also enrich and fix the images.

Development of movement abilities and movement skills we can practice in the gym and use some games and activities on gymnastic apparatus.

Important sources of informations for creating movement images:

- If healthy climber (belayer) describes the route to the blind climber, he can create movement images. The image is never so accurate like the healthy has. But it works the same way. The blind could not use sight and he also use more his hearing, vestibular and proprioreceptive apparatus.
- Impulses from vestibular apparatus inform about position of head and body in the space, direction of mens movement, movement acceleration and deceleration.
- Through proprioreceptor impulses we feel our body, its position, changing the positions and muscle effort, which makes the changes. There are also perception of pain – signal of muscle fatigue and sense of skin perceptors that inform about quality of grab, hand hold and also quality of support on foot hold.[8]

References

1. Fialová, L. (1996). *Dobrodružství, napětí a riziko v tělesné výchově*. Těl. Vých. Sport Mlád., roč. 62, č. 4, s. 9–12.
2. Francová, J. (2005). *Měření elektrické aktivity vybraných stabilizátorů lopatky v polohách horní končetiny charakteristických pro sportovní lezení*. Diplomová práce (vedoucí Pavlů, D.). Praha: UK FTVS.
3. Heitkamp, H.C; Mayer, F.; Böhm, S. (1999). *Effekte eines Klettertrainings im Vergleich zu isokinetischem Krafttraining auf die Wirbelsäulenstabilisierende Muskulatur*. Aktuelle Rheumatologie, 24, 40–46.
4. Krick, M. (2001). *Projekt „Klettern als Therapie" – Gruppenarbeit mit SI – Kindern*. Ergotherapie und Rehabilitation, 7, 17–22.
5. Neuman, J. a kol. (1999). *Překážkové dráhy, lezecké stěny a výchova prožitkem*. 1. vyd. Praha: Portál.
6. Potměšil, J. a kol. *Mají pro nás pohybové aktivity význam, který jim přisuzujeme?* In Tilinger, P. a kol. (eds) *Sborník příspěvků národní konference Sport v České republice na začátku nového tisíciletí*. (s. 411–414). 1.vyd. Praha: UK FTVS, 2001.
7. Součková, G. (2005). *Výcvik lezení nevidomých dětí na umělé horolezecké stěně*. Bakalářská práce (vedoucí Vojtík, P.). Praha: UK FTVS.
8. Vomáčko, L.; Boštíková, S. (2003). *Lezení na umělých stěnách*. 1.vyd. Praha : Grada Publishing a.s.
9. Wiener, P. (1986). *Prostorová orientace a samostatný pohyb zrakově postižených*. 1. vyd. Praha: Avicenum

INSTRUCTOR OF SPELEOALPINISM AND SPELEOLOGY—THE ONLY SPELEOLOGICAL LICENCE COURSE IN THE CZECH REPUBLIC

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Abstract
The article deals with background, motivation, establishment, structure and realisation of the first licensed course for instructors of speleoalpinism and speleology in the Czech Republic. The course has two levels: the basic level, encompassing 55 hours of education and training (20 hours of theory and 35 hours of practical training), and the professional level, engaging 105 hours (40 hours of theory and 65 hours of practical training). The courses consist not only from topics dealing with speleology and speleoalpinism, but very significant parts of the courses are devoted to the specific pedagogical questions as for example the theory of motivation to rope activities, support of self-confidence, teambuilding, organisation, distress management and safety. The establishment of the course is a result of a close co-operation between the Faculty of Physical Culture, Palacky University in Olomouc, and the Faculty of Biomedical Engineering, Czech Technical University in Prague, based on the agreement about collaboration in science, research and education.

1. Background and Establishment of the Course

The idea to create a licence course for instructors of speleoalpinism and speleology first arose in Duha – Children and Youth Association for Leisure Time, Nature and Fun around 10 years ago. Unfortunately, there was a lack of qualified lecturers not only in Duha, but also in other co-operating institutions, especially in Czech Speleological Society – Speleological Club in Prague. Since the idea was first announced, the potential lecturers started to achieve their proper qualifications and training (very often abroad, because there were no appropriate courses in the Czech Republic). Further more, they started to constitute a collective of lecturers, to prepare contents of the intended course and to prepare educational materials and speleoalpinistic equipment. Three organizations: Duha, Speleological Club in Prague and Speleological Club in Ostrava started to run the course in summer 2000, still without the recognition and without a possibility to issue any licences. During the first four years of the course, the system of education (involving theo-

retical and practical training), the contents of the courses and the group of lecturers were prepared.

In autumn 2004, at the First Outdoor and Sport Education conference in Hruba Skala, agreement between five different institutions was settled so that the first recognized licence course for instructors of speleoalpinism and speleology could be established. The co-operating organizations are: 1) Palacky University in Olomouc, Faculty of Physical Culture, Department of Leisure and Outdoor Education, 2) Czech Technical University, Faculty of Biomedical Engineering, 3) Duha – Children and Youth Association for Leisure Time, Nature and Fun, 4) Czech Speleological Society – two basic organizations: 1-06 Speleological Club in Prague and 7-07 in Ostrava, and, finally, (5) Czech Tourist Association, Section of Speleology and Karst Turistika.

The first two institutions: the Faculty of Physical Training and the Faculty of Biomedical Engineering assure recognition of the course and guarantee proper structure of education and its form and level. The co-operation is based on the bilateral 'Agreement about collaboration in science, research and education' between the two faculties. The rest three organizations provide skilful lecturers, speleoalpinistic and speleological equipment, terrain suitable for theoretical and practical training involving wild caves and natural climbing walls, grant subsidy and other support.

Even though the licence course is open for public, the priority have students of both the faculties and members of the three leisure time associations so that these organizations can educate enough instructors especially for their own outdoor activities or to offer the course as a part of their educational and training activities.

2. Levels and Structure of the Course

The licence course has two levels differing in required knowledge, skills and scale: (1) The basic level encompasses 55 hours of education and training from which 20 hours are devoted to theory and 35 hours to practical training, and (2) the professional level requiring 105 hours composed of 40 hours of theory and 65 hours of practical training.

The courses consist not only from topics dealing with speleology and speleoalpinism, but very significant part of the courses is devoted to the specific pedagogical questions as for example the theory of motivation to rope activities, support of self-confidence, teambuilding, organisation, distress management and safety aspects of the activities.

The courses may be realized in two different ways: (1) as a long time stay preferably in a karst region, typically lasting 10 days, or, (2) as a regular educational series of several teaching hours a week, accompanied with several weekend training activities and excursions to underground.

fig. 1: Teambuilding activity "Australian sloth"—the author's speleological modification of the well-known activity "Trust fall," when an aslope speleological ladder is used for climbing like a sloth.

fig. 2: Swimming in a lake—an ideal opportunity to interconnect leisure swimming with training of the speleoalpinistic techniques.

fig. 3: "Breakfast in the Sky." Unconventional way of having breakfast. Use of the Single Rope Technique is necessary to reach the table with food and drinks.

Even if the course is organized in the first or second way, the topic of speleology and speleoalpinism soaks through almost all additional activities and also through the participants' leisure time. All motivating, introductory, social and problem solving games are organised so that participants can get familiar with the speleological equipment and techniques and so that they can use the already taught techniques in other fields and programs than speleology itself. This aim is fulfilled not only by 'special speleological games', but rather by slight modifications of favourite games by exchanging used material with a speleological one (Fig. 1), changing topics and

fig. 4: Single rope technique on the building of the Faculty of Biomedical Engineering during night.

fig. 5: Single rope technique inside the building of the Faculty of Biomedical Engineering.

themes of the games, introducing novel conditions (Fig. 2), situating the games into a new environment, or 'speleo'-modification of everyday procedures (Fig. 3).

3. Realisation of the course:

The course is currently realised in two different ways:

a) The long-time course taught regularly each week at the Faculty of Biomedical Engineering, Czech Technical University in Prague. The course is taught especially for students and employees of the faculty. Well equipped lecture rooms of the faculty are used for education of theoretical topics. Practical skills are practised directly on or in the high building of the faculty (it has 8 floors, see Fig. 4 and Fig. 5) or at other places nearby (artificial climbing wall, trees, old buildings). The complex of caves in the quarry of Chlum, belonging to the Czech Speleological Society—Speleological Club Praha, serves as a natural training place both for caving and single rope techniques.

b) The intensive course, organised in June every year for 10 days in a vicinity of Jesenik, predetermined for students of the Faculty of Physical Culture, Palacky University in Olomouc and for youth-workers of Duha—children and youth association for leisure time, nature and fun. The place of the course excels in a variety of

fig. 6: Plan of the speleoalpinistic training wall on the building of the Faculty of Biomedical Engineering.

natural caves, quarries, karst formations and many other phenomena of the limestone region of Jesenik Karst.

At the premises of the Faculty of Biomedical Engineering, a special speleoalpinistic training wall is intended to build (Fig. 6). In the lower part of the wall, a piece of a standard artificial climbing wall 10 m high will serve for training of belaying and basic climbing skills. The rest of the wall is designed so that all basic single rope techniques could be practised – from single climbing and abseiling the entire high wall, through building and overcoming speleoalpinistic routs similar to those in real caves, to a metal structures allowing building high rope courses and similar rope games. The practical realisation of the training wall is planed for 2007. It will be the only complex speleoalpinistic training wall in the Czech Republic.

4. Conclusion

Co-operation between Faculty of Physical Culture and Faculty of Biomedical Engineering, supporting by three nongovernmental organizations, led to establishment of the only licence course for instructors of speleoalpinism and speleology in the Czech Republic. The co-operation in this field continues not only in professional and official affairs, but also during common education and exchange of students and teachers.

SAND ROCKS CLIMBING ELEMENTS

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Sand rocks climbing belong to classic climbing discipline. An accent is on conventional rules keeping, protection, new route establishing and environment protection, because the majority routes are in protected landscape. The article is dealing with basic, necessary equipment, basic climbing techniques overview and application in school physical education. As part of this study, the methodical video material will be presented (15 min approx.)

Keywords
Climbing, sand rocks, tradition, education, adventure sports.

References

Dieška, I., Širl, V. (1989). *Horolezectví zblízka.* Praha: olympia.
Louka, O. (2005). *Základy lezení na umělé stěně-vyb.kap.* Ústí n.L: UJEP. ISBN 80-7044-592-0
Procházka, Vl. Et al. (1990). *Horolezectví.* Praha: Olympia. ISBN 80-7033-037-6.
Ružička, J., Šilhán, F. (1998). *Jištění je jistota.* Brno: Montana.
Schubert, p.(1997). *Bezpečnost a riziko na skále, sněhu a ledu. I, II,* Plzeň: Kletr. ISBN 80-850822-27x.

3. MOUNTAINEERING/ CLIMBING AND ECOLOGY

SPORT AND ENVIRONMENT

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Sports are an important possibility to experience nature. A lot of different sports are typically exercised in nature and enable to experience nature in another active way and therefore to experience also the value and the regeneration potential of natural attractions. Different sports enable different stages of nature experience and therefore for nature appreciation. The more the sport is demanding, the more the sportsmen/women is concentrated on itself and the less he/she has the possibility to 'experience' the natural attraction and its values. Sports have therefore the potential to increase the environmental awareness. On the side nature may also be regarded as 'sport´s equipment' without any consideration of an environmental agenda.

At the same time sport in nature may also have environmental impacts. Depending on the kind of sport these impacts can be very diverse. Some environmental impacts are due to the number of athletes (like erosion due to 'mass-hiking'). Other sports are activities of minorities but penetrate into remote natural areas and can therefore have massive impacts although the number of athletes is quite limited (like canyoning and snow-shoe hiking). And finally there are sports which have huge impacts due to their needed technical equipment (like skiing).

Measures to reduce environmental impacts of sports can be classified in the following way. Some measures intend to persuade athletes to behave in an environmental friendly way (like folders, notice-boards at the beginning of trails etc.). Other possibilities are legislative measures (like access restrictions) or 'behavioural offers' (like special places to perform the sport).

In order to deal correct with the environmental impacts of sports, a critical analysis of the local situation has to be followed by an assessment of the possible and reasonable measures to reduce the impacts. There are no simple and easy ways. Rather the local situation, the kind of sport, the amount of athletes and their mindset are important prerequisites to find adequate measures – in order to reduce the environmental impacts **and** to maximize the recreation possibilities of the performers.

OF PEOPLE AND OF PEOPLE AGAIN…

Opening speech to the workshop:
Ecology in Mountaineering and Climbing

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fig. 1


fig. 2

The following contribution aims in no way to evaluate influence and possible impacts of climbing activities in Bohemia and Lower Saxony in exhaustive way. It rather offers a muse about how the members of the climbing community perceive the natural environment where they practice their life and a lot of their leisure time. If some mistreatments of some few climbers are mentioned in the following text, it will only be done from comparative and not confronting reasons, i.e. climbing vs. nature protection.

Right the feelings from the following pictures (fig. 1 – spring view from Stribrne steny and fig. 2 – winter view from Stribrne steny) may suggest to the reader how does she/he perceive the surrounding environment of the outdoors. Do they feel contrast or do you rather feel them in harmony, continuity? Do they make some feelings at all? The previous questions don't have a clear right/wrong answer, rather, they initiate musing. Do I really perceive environment (nature)? Or is it just an unimportant coulisse? Do I feel happiness, sorrow, does the environment deepen my momentaneous emotions? One might ask many of such questions, but it is equally important to seek answers to them as well! Even a so far ignoramus will find out she/he is addressed, unsettled, roused, but also lullabied and caressed...

Sandstone rocks are an indivisible part of natural environment and as such we should perceive them. Not as something separate, something that is there only and entirely (or at least primarily) to fulfil climber's needs. They were here before the

fig. 3

fig. 4

ancestors of contemporary man came, they watched his development and only in the last thousands and hundreds of year they have experienced consequences of his life and activities – building block quarries, sacral buildings (fig. 3 – a chapel in Modlivy dul near Svojkov), refugees etc, but also mountaineering or better, rock climbing. But precisely these rocks have become in these millions of years a home for many representatives of both fauna and flora. And often, this to the extent of total dependency, that means that the animal or plant cannot live anywhere else. Or "just" to raise their own hatch (fig. 4 – a family of black stork, lat. Ciconia nigra). Then doesn't matter whether it concerns a critically endangered specie like in Elbe sandstones reintroduced falcon (Falco peregrimus) or just threatened such as owl (Bubo bubo) or a specie strongly endangered, e.g. stork (Ciconia nigra). All the above mentioned and many others need rocks for their reproduction, i.e. to a successful breeding their offspring. And a man? Will he survive without rock? The few spring months? For sure yes. And even if there were no rock, even then the man would surely survive. He would only find a different entertainment or self-actualisation. These creatures though cannot live without rocks or in rocks permanently occupied by people.

People are many. And people are getting more. And even if more and more individuals are absorbed by urban agglomerations, the hunger and lust for outdoor life doesn't shrink a little. Only the consonance with nature, the awareness or belonging of all creatures shrinks – and it cannot be learnt in any school, through TV or computer-assisted learning programmes. And then more or less numerous hosts of tourists and climbers among them come outdoors, who have no or just minimal behavioural patterns imprinted. There is no fully satisfying solution for this situation, informational materials can only raise awareness in what is not to happen, what is inconvenient or what is forbidden. And it is impossible to leave all visitors

fig. 6

fig. 5

to enter to the most precious localities of national parks and protected areas for their only presence would trample to death all living there. And so it is necessary to regulate – somewhere less and somewhere more – the paths and movement of the visitors (and climbers). And of course, however, also to inform about the environment as much as possible and to repeat and remind restlessly the information and the necessary closures and interdictions. Then, in terrain, various pathways, stairs, ladders, anti-erosion barriers emerge and also the whole lot of boards, information panels, fingerboards and other terrain markings and signals (fig. 5 – crossroad at Torrstein, Saxony). Originally only a little impacted nature gets a dimension of something cultivated, ungenuine and in extreme cases even of a park character.

Above stated concerns not only tourists and hikers but also climbers. An artificial wall in every town allows more and more people (of all age groups) to get initiated and experienced in climbing. Nothing against it, but... In some localities it happens that there are many climbers, sometimes too many. And it is hard sometimes, to guess why they have come to the rocks. Often, they only come to train, in the same way as they would train at an artificial wall. They got some locomotive habits there, but it is different on rocks! There is a risk of fall and injury. The style is different, unlike at the wall it is necessary to use friction more... Instead of a well-being and positive adrenalin experience a stress and in extreme cases even nega-

tive feeling against 'hostile and dangerous' rock may come. Yet couple of days of practice climbing under supervision in a training terrain would make the deal (e.g. the old and unused quarry – fig. 6 – training wall Torreador in the valley of Sucha Kamenice, Elbe valley). I believe that it is a great space for CHS (the Czech Mountaineering Association) – both for the leadership and the local groups. The current practice which allows to buy a member's card without any training goes completely against the common sense, regardless this is a practice long-established in western countries. If I go for a sky-diving I need to pass a basic course as well! And commercial use of rocks? It brings along all the mentioned risks multiplied with the fact that some people are used to count everything with money – be it an instructor or a client. Then it really is all about an adrenaline pseudo-experience, packed and marked as any other goods on store.

Let's rather get back to the womb of rocks. The sandstone is not just one. On the surface, it always creates several millimetres or centimetres thick cortex, a layer of a higher consistency than the core. If this layer is eroded, crook, grinded, scuffed... the erosion of the core progresses very quickly. The whole rock cities are formed by the erosion (water, wind, temperature sways... fig. 7 – rock gate near Nove Osinalice, Dubsko) and by the exposure to the living environment (lower and higher plants, fig. 8 – Mnium hornum and fig. 9 – ivy, Hedera helix). And as it was mentioned, currently the rock towers and often the cliffs are by a big extent influenced also by the activity of climbers. Sandstone is not concrete, which can stand more both in brush or break. It is not even a granite or limestone, which has much higher hardness characteristics. Also artificial wall grips look quite the same as the sandstone ones, but the glue that keeps the sand grains together is substantially different from the natural one! So by an influence of several generations of people with an interest in rocks (surely not only climbers) left irremovable footprints (fig. 10 – no-name stone near a tourist path, Hruba skala).

Many footprints remain back from the beginnings of sandstone climbing. Then the one and only motto was to stand up on the summit and to this aim all possible means were submitted – was it various ladders, pitons, but also gauging and digging of grips and footsteps and sometimes of whole stairs (fig 11. – Falkenstein with gauged stairs, Oybin, Saxony). In order to make viewpoints at the rock summits accessible following the example of alpine routes, "viae-ferrata" were built and routes were equipped with banisters. Fortunately the climbing pioneers realised quickly the uniqueness and potential of sandstone rocks and started with creating ethical rules of sandstone climbing and routes building, rules that only with little changes have been valid since the 19th century till now. Since the creation of the rules the pureness and style of the ascend has always been valuated. So far today, unfortunately. Today the aim is often switched for the means and the end justifies everything. Primarily climb the route of that or that difficulty, surely as

fig.7

fig. 8

fig. 9

fig. 10

fig. 11

equipped as possible and then it is of no importance what tower and in what territory the route was and what I could see or feel from the summit... Similarly with opening new routes. Does the classic rout opened some 50 years ago in a difficulty VI twine through the face? Never mind! Easily I can straighten it in two or three boulders of IX-X with a hook every 3 meters! Does the original route get worthless? Who cares for an unequipped six?

Such an example is unfortunately not a theory, these things happen. The ego of an individual, which should face to face to rock cliffs and towers huddle in a corner of a conscious, grows to giant sizes and actually disqualifies its bearer to experience the awesome moments of climbing, climbing in nature, the contact with a living rock.

Chalk. It can't be left unmentioned. Various more or less scientific and serious researches can't agree whether it harms sandstone, has no influence or even flourish it. From my frequent staying in the rocks I can mention one positive and two negative impressions – regardless the fact that chalk use is against the sandstone climbing ethics and is forbidden in the rules (both Czech and Saxon, which were the origin of the Czech ones). The positive impression is that it works. Chalk re-

fig. 12

fig. 13

ally can dry the swatting fingers, it is after all the effect it is expected to have. The first negative impression is that it fills the space between sandstone grains and decreases friction at grips where it is frequently used. The second, and from my point of view the more important one, is the aesthetic impression. Outdoor rocks white at edges, corners, holes, grips... it is not a really nice view (fig. 12 – chalked grips, Trun, Elbe valley). Often the chalk is everywhere, even holds in routes of difficulty V or VI, grips as big as handles in a tram. It has a lot to do with habits. Habits brought from an artificial wall, habits from granite or limestone. And also with disrespect to the rock, nature, other climbers and actually to myself (I override my abilities above something, which should be an intersect of my skills and natural environment). In this paragraph about current misuse I would like to mentioned drawing of various arrows and signs at sandstone blocks, usually boulders, with oil colours (fig. 13 – no-name boulder with routes, Polomene hory). The 'decoration' cannot be removed without gauging, thus destruction. Cannot we really do without?

What do we in fact leave to our children and grandchildren? Thousands and thousands of finished routes in synoptic terrain with rock soon pinpointed with GPS. Almost everywhere it will be possible to get by car (or by any other transport means of the future) and even if the climbers forget their 'all-paq' (computer, phone, tv-set, player of everything, camera, GPS and god-knows-what-else in one pocket-size box) at home, enough of screens, e-guides, signs and info-panels will guide them the shortest way to their target. There they will climb planned, perfectly equipped (even by-equipped) routes so they can amuse the audience in the evening in their club with a privy and captive speech about their experience and knowledge from the "wild" accompanied with a digital record from their brave super-performance. There will be no room for more routes because we hoarded them all. Napoo. Do you really think they will like it? It is an academic question – they will not have a choice anyway. But what about you, would you like to live like that? Perhaps the heroes from a prepared comic for visitors and climbers of Elbe sandstones (fig. 14 – the bad guy and fig. 15 – the good guy) will make the vision softer.

fig. 14

fig. 15

What to conclude? We all are just people, people understanding and making mistakes, people both powerful and weak, tolerant or with only their truth. Perhaps there is only a little percentage of climbers because of which it is necessary to set rules (even in an ordinary life we cannot suffice with the Ten). And perhaps equally same small is the percentage of those who claim the power to decide, often wrong and incompetent. "Vermin" exists among both climbers and civil servants. It has always been like that and it most likely will remain. It can be fought but it cannot be win. Let's wish there is as least as possible of this "vermin". It will be of a benefit of all of us.

Thank you for the attention, patience and clemency to those who lasted up to here.

4. CLIMBING AND BIO-MEDICAL SCIENCES

INFLUENCE OF CLIMBING ACTIVITIES ON CHILD PHYSICAL FITNESS

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Abstract
The aim of this contribution is to summarise the historical approach to climbing activities in the area of the physical fitness development. We can illustrate that natural climbing has appeared in educational systems since the Middle Ages.

The next part is dedicated to the last scientific research on adults and child climbers out of which we can estimate the influence on physical fitness. We focus only on works referring to the general fitness.

The third part presents our research and observations on the question how climbing activities can contribute to the development of physical fitness.

Keywords
Climbing, physical fitness, children.

Introduction

Climbing activities have entered the consciousness of wide public in the last few years. Climbing in all forms appears in media. The placement of Czech competitors on the international scene enhanced the interest in sport climbing. Outdoor climbing activities have become a favourite background of advertisements. We can say that this activity is very popular and fashionable and has the potential to attract young people to a regular physical activity. The question we would answer is how this activity can contribute to the individual development of a child. I will not speak about the contribution in the social area and child personality although these are very important. I will concentrate my speech only on the somatic approach to the activity.

Historical approach

We have to mention that climbing activities have been used in educational systems in our history. Climbing activities belong to a large group of natural activities. Their contribution to child health has been mentioned by great educators and philosophers since the Middle Ages. Rabelais wrote about climbing in education of his ogres. John Locke and Jean Jacques Rousseau emphasized the positive influence of natural activities to the equilibrated child development. Gutsmuts mentioned in his book Gymnastic fur die Jugend (1857) the positive influence of natural climbing

on physical fitness. Climbing was a part of physical education in Philantopinum. Natural climbing was a part of Hebert's 'méthode naturelle'. Climbing appeared in the system of Jahn, Spies, Lesgaft, etc.

In the Czech tradition, we can see that climbing activities were used in the Sokol organisation since the 60s of the 19th century. We have to emphasize the personality of František Smotlacha. He was the first associate professor of Physical Education in Czech lands and one of his books was entirely dedicated to climbing. He says (1930) that "climbing, swing and hanging are exercises which are very popular and this attraction has the basis in human climbing instincts or atavisms. The primary sense of these instincts is their defence function". Smotlacha also says that these "activities are indispensable for the development of physical fitness and education of a child".

Physical fitness is related to a physical activity. We can express it as a degree of physiological adaptation of organism. The components of health oriented fitness have a relation to the health state.

Authors who are engaged in health oriented fitness (Bar-Or, Malina.1995; Rowland 1996, Malina, Bouchard, 1991) agree on these common factors:

1. Body composition
2. Muscle fitness
3. Flexibility
4. Aerobic fitness

Influence of sport climbing on physical fitness

There have been few studies in recent scientific literature that focus on the influence of climbing on child physical fitness. It is related to methodological problems of causality and the need of the longitudinal experimental design of studies. The contemporary research studies enable only associative thinking of the influence of climbing.

Anthropometry and body composition of young elite climbers

Watts (2003) was studying anthropometrical characteristics of young elite sport climbers. In comparison of 90 young climbers with physical active population he has found, that young climbers were relatively small, with low body mass and a low sum of skin folds. These data are similar to the adult population. Young climbers were supposed to have greater percentage of lean mass.

Muscle fitness and flexibility

Sport climbing is the activity where most of main muscle groups are involved, in particular forearm muscles, shoulder girdle muscles and muscles of lower extremities, in overhanging profiles trunk muscles.

Grant (2001) indicated that elite female sport climbers have greater values of handgrip, number of pull-ups and better bent arm hang than recreational climbers and non climbers. The other studies (Watts, 1993, 1996, 2000; Grant, 1996) show that climbers have relatively greater maximal strength and endurance of forearm muscles.

Nachbauer (1991) has found an important correlation between a climbing performance and tests of isometric endurance of finger flexors and shoulder girdle muscles.

We suppose that climbing influences particularly static endurance of forearm muscles and shoulder girdle muscles. Bouldering and speed climbing would be demanding on the dynamic force of shoulder girdle muscles.

We can confirm this statement referring to our observation. Children (11–12 years) beginners were tested at the arrival to the climbing club. After 7 months of a regular training 2 times per week we did the same tests. The boys progressed significantly in the test of static endurance of shoulder girdle muscles. At the beginning of training, the boys had average performance compared to the Czech population of 11–12 years old boys. After seven months, they were highly above-average. The progress in pull-ups is attributed from our point of view partially to climbing activities and partially to the basic gymnastics which was integrated in training lessons.

The group seemed very homogenous in tests. We can pose the question how much the test results were influenced by another activities and school physical education. Only one boy was trained in triathlon in a seven month period. Other boys stated no organised activity. Two boys sometimes practised skateboarding in their free time. They had few possibilities to go outdoors and outside Prague. The school sport was characterised as ball games (football) and a little of gymnastics among all boys. No child had abnormal increase in weight or in growth.

We can suppose that there is a correlation between regular climbing and the progress in static endurance of upper body muscles.

Grant (1996) stated that top climbers have greater flexibility in hip joint than recreational climbers and non-climbers. It was not confirmed in the similar study with female population. Mermier (2000) did not class the flexibility among factors which could significantly influence the climbing performance. Nachbauer (1991) on the other side found a close relation between the side and front split and the climbing performance.

We assume that climbing is demanding on good flexibility of thigh adductors and ankles. The results in generally spread test sit-and-reach will not probably be influenced by regular climbing. The data from the table 1 show progress in sit-and-reach test at the same climbing group. We attribute the progress primarily to the development of general flexibility in training. It is necessary to find a specific flexibility test for climbers which can measure the flexibility of thigh adductors and ankles.

	N=7	Sit and reach	Bent arm hang (s)	Sit-ups (number/ min)	Pull ups (number)
October 2003	mean	-5,43	20,29	35,00	6,17
	st. deviation	4,96	9,66	3,16	3,31
May 2004	mean	-7,86	33,86	41,43	8,57
	st. deviation	3,84	10,65	1,80	3,63

table 1: Results of physical fitness tests of young climbers (Baláš, 2004)

	sit and reach(cm)	bent arm hang (s)	roll-up (number)
under average	0	12,7	38
average	-4	15,1–21,6	42–44
upon average	-8	26,2	48

table 2: Standards of physical fitness for 12 years old boys (Bunc, 1998)

Author	Difficulty UIAA	Heart Rate	VO_2 (ml*kg^{-}ąmin^{-}ą)	VE (litres* min^{-}ą)	R (CO_2 *O_2^{-}ą)	E (kJ*kg^{-}ąmin^{-}ą)	VCO_2 (ml*kg^{-}ąmin^{-}ą)	Lactate (mmol*l^{-}ą)
Mermier et al. (1997)	8+ (151°)	163 (±15)	24,9 (±4,9)	44,3 (±14,5)	0,86 (±0,11)	0,844 (±0,309)	22,3 (±4,2)	3,20 (±0,97)
Billat et al.(1995)	8+ (informatory complex route)	176	25,9 (±1,2)	-	-	-	-	5,75 (±1,0)
Billat et al.(1995)	8+ (informatory poor route)	159	20,6 (±0,9)	-	-	-	-	4,3 (±0,8)
Watts et al. (2000)	8+	162 (±17)	31.9 ± 5,3	-	-	-	-	
Mermier et al. (1997)	6+/7- (106°)	155 (±15)	21,9 (±5,3)	39,8 (±14,5)	0,84 (±0.09)	0,665 (±0,318)	19,2 (±4,8))	2,40 (±0,68)
Mermier et al. (1997)	5+ (90°)	142 (±19)	20,7 (±8,1)	32,6 (±16,4)	0,81 (±0,06)	0,622 (±0,393)	17,4 (±6,2)	1,64 (±0,63)

table 3: Physiological responses of climbing

There is also a question if we really can influence specific flexibility by natural climbing. Some people do not use flexibility of exigent positions and solve the climbing movement with greater involvement of upper extremities and therefore with more strength. Specific positions and movements are needed to be learnt from this point of view in climbing training.

Climbing and aerobic fitness

Sport climbing does not represent a typical aerobic activity like running, cycling or swimming. The climbing time of a route on a climbing wall does not exceed 3–4 minutes. The intensity is dependent on climbing speed, inclination of the wall, difficulty of the route, climbing style, experiences of the climber, etc. We cannot objectively estimate a physiological response of the organism to the spontaneous climbing due to these variables.

We can estimate the loading from some studies on top climbers (table 3.).

According to these data we can assume that climbers have relatively greater heart rate considering the oxygen consumption. There is no linear relation between the heart rate and oxygen consumption like by running or swimming. The high heart rate is explained by a greater part of isometric contraction (forearm and shoulder girdle muscles) in static positions and the placement of upper limbs above the head. The affective component and the fear of falling can play their role. Oxygen consumption and ventilation classes climbing in the group of activities with middle energy expenditure. This climbing can stimulate cardiovascular fitness. The problem is that children like generally more bouldering and climbing games on the wall. We do not know the intensity of loading in bouldering or in climbing games but we assume that the short time of climbing will not lead to the development of aerobic fitness. Some works (Gindre, 2000) proposed sustained climbing up and down to the development of cardiovascular fitness where we can achieve 90% of our maximal heart rate but this climbing can be used only for well motivated and advanced climbers.

Short term influence on physical fitness

In our pilot work we were interested in the application of climbing in school physical education. 120 children (7–10 years old) were tested in tests of physical fitness (EUROFIT). Half of them continued with normal physical education, the others were climbing in their lessons. After 8 weeks we made the retests and compared the two groups. We analyzed only the results which showed a tendency to change after the intervention. The data from the test flamingo and handgrip were involved in the analysis of covariance (ANCOVA) which enables to count the values of pre-test in the final analysis.

In the analysis of covariance, where the pretests represented covariates, we

could not for the tests flamingo and handgrip refuse the hypothesis that the intervention did not produce a change, $F(1,69)=1,62$, $F(1,69)=1,73$, $p> 0,05$. The test bend arm hang was not even included in the analysis because its pretest-postest values showed no tendency to be different. How it is possible that in the climbing club is the progress so visible and at school we cannot see any improvement. There are more answers and reasons. It was caused by the poor methodological design of intervention. No children free time activity and family sports were included into the analysis. During the intervention, there were autumn and public holidays and the real time of intervention was 6 weeks which seems insufficient to produce an effect. On the other side children from climbing clubs are motivated to do any sport and are generally supported by their families.

The main aim of the study was to choose appropriate tests for the future interventions and to try if climbing activities can be taught in school programmes for a long period.

We have chosen these tests for our future studies: flamingo, handgrip, bent arm hang and one specific test: one arm hang. The analysis should include at least children free time activity, parent's attitudes to the sport and personality of teachers.

At school climbing was very positively accepted by the children and teachers.

Conclusion

Climbing is a very attractive activity for children, especially young children (6–10 old years). After a long term regular activity, we can stimulate the static force of upper body. The development of the dynamic force of upper body, the specific flexibility and the balance at climbing is not known yet. It will depend on the character of climbing and climbers' capacities. More research is needed in this area. We can also stimulate the aerobic fitness by climbing. It is possible with advanced climbers who can climb up and down an easy route or are able to climb longer time on a bouldering wall.

Climbing is not the only solution for the development of child physical fitness. Other activities are necessary to be practiced to learn new skills and to enhance the general physical fitness.

References

Baláš, J. (2004). Možnosti rozvoje tělesné zdatnosti mládeže sportovním lezením. In Rotman, I. (Ed.) *15. Pelikánův seminář horské medicíny.* Praha: Společnost horské medicíny. (In press)

Bar-Or, O.; Malina, R., M. (1995). Activity, Fitness, and Health of Childern and Adolescents. In Cheung, Richmond (Eds.), *Child Health, Nutrition and Physical Activity.* Champaign: Human Kinetics. ISBN: 0-8732-774-3

Billat, V. et al. (1995). *Energy specificity of rock Climbing and aerobic capacity in competitive sport rock climbing*. J Sports Med Phys Fitness, 35, 20–24.

Booth, J., et al. (1999). Energy cost of sport rock climbing in elite performers. British Journal of Sport Medicine, 33, 14–18.
Bunc, V. (1995). *Pojetí tělesné zdatnosti a jejích složek*. Těl. Vých. Sport Mlád., 5, 6–8.
Bunc, V. (1998). *Zdravotně orientovaná zdatnost a možnost její kultivace na základní škole*. Těl. Vých. Sport Mlád., 3, 2–10,
Gindre, C. (2000). *Etude comparée de six activités physiques*. Revue d'EPS, 286 NO/DE, 30-34.
Grant, W., et al. (2001). *A comparison of the antropometric, strength, endurance and flexibility characteristics of female elite and recreational climbers and non-climbers*. Journal of Sports Sciences, 19, 499–505.
Grant, W., et al. (1996). *Antropometric, strength, endurance and flexibility of elite and recreational climbers*. Journal of Sports Sciences, 14, 301–309.
Gutsmuts, J. C. F. (1957). *Gymnastik für die Jugend*. Berlin: Sportverlag.
Hébert, G. (1920). *L'éducation physique ou l'entrainement complet par la méthode naturelle: espose et résultats*. Paris: Librairie Vuibert.
Malina, R., M., Bouchard, C. (1991). *Growth, Maturation, and Physical Activity*. Champaign, Illinois: Human Kinetice Books. ISBN 0-87322-321-7
Mermier, CH. M. et al. (1997). *Energy expenditure and physiological response during indoor rock climbing* Br J of Sports Med, 31, 224-228.
Nachbauer, W. (1991). Étude sur les Caractéristiques motrices spécifiques des grimpeurs de haut niveau. In Dupuy, C. (Ed.) *Actes du Colloque,* Chamonix: E.N.S.A. ISBN 2-906411-05-1
Rowland, T. W. (1996). *Developmental Exercise Physiology*. Champaign: Human Kinetics. ISBN: 0-87622-640-2
Smotlacha, F. (1930). *Biologické základy záliby člověka ve šplhu a visu*. Praha.
Tyrš, M. (1926). *Základové tělocviku*. Spisy tělocvičné II. díl. Praha: Sokolská župa pražská.
Watts, P.B., et al. (1993) Anthropometric profiles of elite male and female competitive sport rock climbers. Journal of Sport Sciences, 11, 13–117.
Watts, P.B., et al. (1996). *Acute changes in handgrip strength, endurance and blood lactate with sustained sport rock climbing*. The Journal of Sport Medicine and Physical Fitness, 36, 255–260.
Watts, P.B., et al. (2000). *Metabolic Response During Sport Rock Climbing and the Effects of Active versus Passive Recovery*. Journal of Sport Medicine, 21, 185–190.
Watts, P.B., et al. (2003). *Anthropometry of young competitive sport rock climbers*. Br J Sports Med, 37, 420–424

THE INFLUENCE OF SELECTED FACTORS ON THE PERFORMACE OF SPORT CLIMBERS

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Introduction

Sport climbing has been developing dynamically in recent years. It differs from traditional mountaineering in the environment and in the way of overcoming climbing routes; on top of that, the difficulty of climbed routes has increased considerably. The objective danger has been minimized and the physical form of the climber plays a primary role.

The ground for sport climbing is manifold. Climbing takes place on artificial walls or in rocky grounds with different inclination angles (from 45° to 180°). Due to this fact, the climber has to fulfil diverse requirements set down on his motoric abilities and skills.

The preconditions for achieving high performance in sport climbing have been analyzed by many authors who generalize their practical experience (Vrábel 1987, Procházka and team. 1990, Goddard and Neuman 1993, Pichon 1994, Kostenmeyer and Tusker 1997, Long 1998, Coudray et al. 1998, Glowacz and Pohl 1999, Kostenmeyer 2001, Vomáčko and Boštíková 2003).

Competitive climbing takes place on artificial walls at international level and has many disciplines. Sport climbing has nowadays many devotees in the ranks of recreational climbers and it has been incorporated into the curriculum of every school type

The requirements set down on the climber on the artificial wall are lower in the terms of the climbing route perception but higher concerning the strength. The performance of sport climbers has markedly increased in the last five years. The traditional ways of performance enhancement are exhausted and all climbers are seeking new methods to increase their performance.

Empirical studies have been carried out within the last several decades. More and more authors are researching the relation between different indicators and climbing performance.

The studies from the first half of the 1990's point out that climbing performance is determined by anthropometric indicators (Watts 1998, Billat 1995, Grant 2001, Tichý 2001, Chudoba 2001, Watts 2002). Simultaneously, other studies appear monitoring climbing performance and some psychological factors by young climbers (Sarrazin et al. 2002).

Climbing performance is influenced by a number of physiological indicators (Mermier et al. 2000). In addition, sport climbing performance is, according to Kostenmayer (2000), affected by a local aerobic metabolism. The results of the blood analysis after the World Cup competition showed lactate levels up to 11 mmol/l (Billat 1995).

Performance monitoring and contrasting expressed in terms of route difficulty led to an assertion that the longer is the climbing practice with an increasing form, the lower is the strength proportion needed for overcoming a particular route. This has been proved during climbing technique training sessions. A 'technique' is a way of solving a movement; it includes an enhancement and training of movement skills which are necessary for making a particular movement. Climbing performance of experienced climbers in comparison with the beginners is more dynamic and better coordinated when making the climbing steps (Kostenmayer 2002).

In addition, experienced climbers anticipate the movements better (Boschker 1999, 2002b). Climbers with good observation talent have a certain advantage when choosing the climbing route (Long 1998). The experience is not the only factor influencing climbing performance; it is also the movement anticipation which is a determining and very often also a limiting factor of it (Vomáčko 2002).

Grant et al. (2001) compared motoric indicators, strength, endurance and movement extent in three diverse groups of women – elite, recreational and non-sporty. The elite group differed from the other most in the finger strength.

The performance structure in general and in various sport disciplines has been analyzed by a number of authors. (Čelikovský 1990, Harre 1973, Hay a Reid l998, McPerson 1990, Pradet 1997, Weineck 2002). The most valuable studies in the Czech Republic are the ones of Choutka and Dovalil (1991) which provide a comprehensive compendium of previous empirical researches. According to these two researches, sport performance is determined by a particular set of factors which are organized in a certain way and are mutually interconnected; they as a whole condition the performance level. The representation of the individual factors varies from one sport discipline to another and certain variations can be observed at different performance levels. The performance structure is a general model; its parameters compared with the parameters of a particular climber can provide some valuable information about climber's performance pre-requisites (Choutka a Dovalil 1991).

Many studies about performance have been conceived from the physiological or psychological point of view. Sport climbing performance structure, which is different from the mountaineering disciplines, was studied in detail only by Mermier (2000). Furthermore, Zaťko (1985) researched another climbing discipline, i.e. rock climbing.

This contribution introduces three studies which foreshadow the significance of the selected performance factors in sport climbing.

Anthropometric characteristics of sport climbers

The group of probands was selected from the climbers who took part in two series of the Czech Climbing Cup in April and May 2001. The current ranking served as selection criteria; it included first 30 places in the men's category and given the limited selection and result objectivity, first 11 places in the women's category,

In the end, 36 probands were selected on whom the necessary measuring was performed. 19 men (age 20,00–37,99), 6 junior-men (age 14,00–19,99), 4 women (age 23,00–28,99) and 7 junior-women (age 11,00–16,99).

The measuring was carried out using a standard anthropometric technique, Martin Saller (1957), and selected current methods.

The proband stood in the basic stand (heals together toes apart) at a wall, he/she was touching the wall with the heels, buttocks and with the back. The lateral dimensions were taken on the right side of the body.

The following measuring instruments were used: scales (its precision was checked before), anthropometer GPM, sliding gauge, cephalometer, pelvimeter, measuring tape and caliper type Best. The length, width and circumference (cm) were measured with a precision of 0,1 cm, skinfolds (mm) with the precision of 0,5 mm.

Results

The average value of standardized indexes ranges between the average and bellow average e.g. only humerus is developed above the standard.

The minimal measured values are: weight, abdomen circumference, gluteal circumference, middle thigh circumference, calf max., calf min, body fat.

Maximal measured values are: width of epicondyle of humerus, length of extremities, forearm length, proportion of the skeleton, and width of shoulders.

Width indexes indicate a 'relatively' higher development of the upper part of the body. The shoulders are wider than the pelvis.

Extremity indexes corroborate macrobrachion – long upper extremities; and by women brachybrachion – short upper extremities.

The muscle mass is shifted upwards, into the area of shoulder girdle and upper extremities. Muscles are substantially developed on the forearm. The proportional biological age was determined only by juniors. The development of junior – women was retarded in 71, 2 % by 2 years at the maximum; the development of junior men was accelerated in 66,7 % also by 2 years.

The body composition determined by the Matieg method shows a lower fat and muscle proportion; therefore, the skeleton proportion is higher. It is not possible to say whether the lower muscle mass could influence the climbing performance.

As the weight is reduced as well, it is probable that the relative strength is still at a high level. The parts which are most exercised when climbing have the muscles sufficiently developed, which is visible on the relatively larger circumferences of the upper extremities.

The somatic type of junior women and junior men is the same, mesomorph – ectomorph (255, 344), men are ectomophic mesomophs (263) and women are balanced mesomorphs (353).

The index evaluation of the proportion – hand length/forearm length, finger length/ body height and arm length – did not corroborate a direct relation between the index value and the maximal performance. Of course, the lower is the index, the higher should be leverage for the muscular work and movement.

This is only a theoretical assumption; there are other factors which influence the climbing performance. Even though the conditions of climbing performance are not constant and it is very complicated to define exactly an ideal figure, the results pinpoint one proband.

Tomáš Mrázek with his physical constitution is very near to our 'ideal' values and he confirms with his performance (1st place Junior World Championship, 2nd Senior World Championship) the validity of the stated conclusions.

Results from other authors (summary)

	Height (cm) - SD	Weight (kg) - SD	Body fat: (%) - SD	Arm span (cm) - SD
Grant et al. (2001)	166,00 ± 7,00	59,50 ± 7,40	24,80 ± 3,70	66,10 ± 4,00
Binney (2001)			9,60 ± 3,50	
Mermier et al. (2000)	177,40 ± 8,80	72,80 ± 11,60	9,80 ± 3,50	185,40 ± 9,60
Vomáčko (2001)	177,75 ± 6,62	65,92 ± 4,35	3,43 ± 1,84	
Tichý (2001)	165,20 ± 7,47	65,20 ± 2,00	8,00 ± 1,35	

Relation between agility, climbing performance and the length of climbing practice

The objective of the second study was to prove the relation between agility, climbing performance and the length of climbing practice.

All tested climbers preferred climbing on artificial walls (difficulty climbing, bouldering) or rock climbing. The climbers took part in the test voluntarily and they were informed in advance about the test requirements and its difficulty.

The group of sport climbers was selected from the participants of the Czech Cup, which took place on 26–27 April 2003. The climbers were chosen on the basis on the following criteria: men to the 25th place, women to the 20th place or consid-

ering the rock climbing performance: men 7c and women 6c by the French Rating System. (See Annex: table14).

18 probands were selected on the basis of these criteria and the particular measuring was carried out: 9 women (age 12–26) and 9 men (age 15–37), so two groups were formed: men and women.

Measuring methods

The basic motoric performance was evaluated following a set of chosen motoric tests. These are standard and unified tests, from the results of which can be estimated the level of basic motoric ability. Each test is an indicator of a different motoric/skill ability; these as a whole are inner, functional and integrated pre-dispositions for a motoric activity. The motoric content of the tests has a form of elementary and natural activities, which come up in a number of climbing situations. From this perspective, it is possible to evaluate the validity of the used tests. Their content and motoric structure coincide with concrete and applied activities; the so-called content or logical validity of the test is particularly emphasized.

The skill abilities were tested by standardized tests (Měkota, Blahuš, 1983) which determine static motoric balance (stand on one leg), dynamic (walking backwards in a hexagon, tests of agility and skilfulness (set of exercises with a bar, jump over a bar). Moreover, the standardized tests (Nachbauer, 1990) which examine the hip mobility (frontal split, frog position) were used.

One of the test criteria was its minimal reliability 0.75.

Tests of motoric balance

Test name	Reliability $r_{s\text{-}b}$	Author
Static balance	0,85	Neilson, Jensen, 1972
Dynamic balance	0,77	Fleishman, 1964

Tests of agility and skilfulness

Test name	Reliability $r_{s\text{-}b}$	Author
Jump over a bar	0, 89	Hošek, Momirovič, 1975
Set of exercises with a bar	0,95	Hošek, Momirovič, 1975

Test of joint

Test name	Reliability $r_{s\text{-}b}$	Author
Frontal split	0,97	Nachbauer, 1990
'Frog position'	0,95	Nachbauer, 1990

Description of the measuring procedure

Each measuring took place within the same day. Prior to the test, all climbers were asked whether they had suffered from a serious illness or injury in the recent time and as such they can take part in the test without any limitations.

The first testing was carried out at the climbing wall Rajce in Brno on 26–27 2003 during the Czech Cup in difficulty climbing. There was enough space by the climbing wall and the conditions for this particular test were fulfilled (air temperature 22ºC, not too loud, enough space for measuring). The tests were conducted simultaneously with the competition and were carried out before the climbing performance to avoid the distortion of the results due to the fatigue from the competition. Nine women and seven men were tested during that weekend. All climbers complied with the selection criteria: men to the 25th place, women to the 20th place in the 2003 Czech Cup Ranking or with the second criterion, the rock climbing performance – men 7c and women 6c OS according to the French Rating System.

The second measuring of other two climbers (men) took place on 10 May 2003 at the climbing wall in the Sport Centre Evropská in Prague 6. Admittedly, these did not compete in the Czech Cup, but they complied with the second criterion, i.e. they have climbed a route of 7c OS according to the French ranking.

The relation between the individual continuous quantitative variables was researched through a correlation and regressive analysis; the strength of the simultaneous change in value of two numerically valued random variables is called correlation; the prediction of a continuous variable on the basis of one or two known variables is called regression (Zvára, 2001).

The mutual relation between the individual continuous parameters was determined on the basis of the Pearson correlation coefficient r (Pearson_r), which determines the grade of linear dependency of two continuous random variables.

The correlation analysis was used for examining the mutual relation of the best climbing performance and the individual parameters, which are the balance, agility, mobility and length of the climbing practice.

Tables below show the identified correlation coefficient of the individual components, separately by men and women.

Correlation results of the individual tests and the best performance by men

Test	Correlation coefficient
Balance test	-0,16
Agility test	-0,32
Mobility test	-0,24
Climbing practice	0,21

Correlation results of the individual tests and the best performance by women

Test	Correlation coefficient
Balance test	0,25
Agility test	-0,43
Mobility test	0,42
Climbing practice	0,37

Due to the small size of both evaluated groups, it may be convenient to merge them and get a group twice as big. This should enhance the statistical significance of the results. The correlation results of the merged group are displayed in the 3rd table .

Correlation results of the individual tests and the best performance by men and women

Test	Correlation coefficient
Balance test	-0,07
Agility test	-0,29
Mobility test	-0,04
Climbing practice	0,60

Only the parameters of the length of climbing practice and the best climbing performance have a correlated relation in the table 3 and thus a simple linear regressive analysis was carried out for these two parameters.

The used statistical tool was a packet of statistical functions for a variance analysis ANOVA (Zvára, 2001), implemented in Excel (Microsoft). The analysis included a straight line parameter calculation. The point graph with the regressive line (fig. 1) shows better the mutual relation between the two studied parameters.

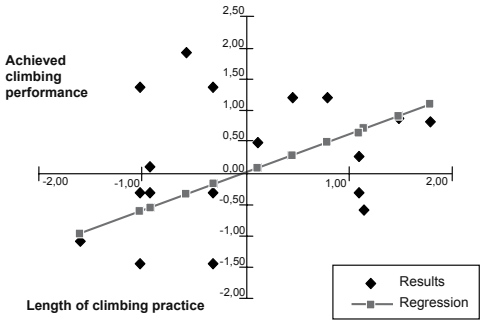

fig. 1

Conclusion

The calculated correlation coefficients for the best performance and other monitored parameters show that the only demonstrated relation concerns the climbing performance and the length of climbing practice. The validity of this assertion can be also verified in the graph, where the results are depicted and compared with the monitored parameters and with the regressive straight line.

The fact that the climbers with a longer climbing practice also perform better can stem from many factors. One of them is the psychological aspect. The longer you climb, the more psychically resistant you become. Climbing is psychologically a very complicated activity, in which several aspects can take part: cognitive processes (perception, imagination, and attention), emotions (fear, joy) and motivation processes. An important part of the climbing practice is the consolidation of volitional qualities, such as ambition, self-control, self-confidence, courage, steadiness, etc. Climbing practice involves, among other things, a technical and tactical preparation. The technical preparation includes, above all, a climbing technique practice and an acquirement of new movements. The tactical preparation develops the ability to make a correct decision (when to rest, when to click a quick-draw) at the right time. Not least, the physical condition should be remembered. The longer you climb, the better you are as far as the strength, strength endurance but also general physical condition is concerned.

The results of the correlation analysis separately by men and women show that the monitored parameters (agility, balance and mobility) contribute more positively to the woman's than to the man's climbing performance. This confirms the stated hypothesis.

That is to say, the men are able to compensate the lower level of coordination abilities through physical strength; meanwhile, women do not have such strength predispositions, they compensate this handicap by climbing more technically and coordinating better their movements. Nevertheless, it would not be advisable to draw any conclusions from a study which included 9 probands. These assertions yet confirm the validity of the hypothesis stated as the objective of the study, that is to say, the stated parameters are far more important for the climbing performance by women than by men.

Bibliography

Binney, D. M., Cochrane, T., *Competitive rock climbing: Physiological and anthropometric attributes,* 2nd International Conference on Science and Technology in Climbing and Mountaineering, University of Leeds, 2002.

Binney, D. M., Cochrane, T., *Differences in strength between males and females in competitive rock climbing,* 2nd International Conference on Science and Technology in Climbing and Mountaineering, University of Leeds, 2002.

Blahuš, P., *K systémovému pojetí statistických metod v metodologii empirického výzkumu chování*. Praha : Karolinum, 1996.
Blahuš, P., *Faktorová analýza a její zobecnění*. Praha : SNTL, 1985.
Boshker, M. S. J., Bakker, F. C., Michaels C. F., *Sport climbing: Perceiving nested affordances,* Institute for fundamental and Clinical Human Movement Sciences Faculty of Human Movement Sciences, Vrije Universiteit, Amsterdam,1999.
BOSCHEKER, M.S., et. al, *Observational learning by inexperienced sport climbing*, 2nd International Conference on Science and Technology in Climbing and Mountaineering, University of Leeds, 2002,
Bursová, M., Vojtíik, J., *Přehled metod stimulace motorických schopností*, 2. Vydání Plzeň: ZČU – PF, 1996.
Čelikovský a kol., *Antropomotorika*, 2. vydání Praha: SPN, 1990.
Dieška, I., Širl, V., Horolezectví z blízka, Přel. V.Širl 1.vyd. Praha: Olympia, 1989.
Dovalil, J. a kol., *Výkon a trénink ve sportu*, 1. vyd. Praha: Olympia, 2002.
Fleischman, J., Linc, R., *Anatomie člověka 1*, nezměněné vydání Praha,1975.
Glowacz, S., Pohl. W., *Volné lezení*, Přel. J. Vokálek. 1. vyd. České Budějovice: Kopp.,1999.
Goddard, D., Neuman, U., *Performance rock climbing*, Mechanicsburg, Stackpole books, 1993.
Grant, S., et. al, *A comparison of the anthropometric, strength, endurance and flexibility characteristics of female elite and recreational climbers and non-climbers*, The Journal of Sport Science, 2001.
Grant S., Shields, C., *Climbing-specific finger endurance: A comparative study of intermediate rock climbers, rowers and aerobically trained individuals*, Journal of Sports Sciences, 2003.
Havlíčková, L., *Fyziologie tělesného zatížení I. – Obecná část*, 1. vydání Praha: UK – Karolinum, 1994.
Heller, J., *Fyziologie tělesného zatížení díl II. – Specializovaná část. Díl 3*, 1. vydání Praha: UK-Karolinum, 1996.
Hendl, J., *Přehled statistických metod*, Portál, s.r.o., Praha, 2004.
Hošek, V., Rychtecký, A., *Motorické učení*, 1. vyd., Praha, SPN, 1975.
Hörst, E., J., *Flash Training*, Evergreen, Colorado: Chockstone press, 1996.
Hörst, E., J., *How to Climb 5.12*, Evergreen, Colorado: Chockstone press,1997.
Choutka, M., Dovalil, J., *Sportovní trénink*, 2. vyd. Praha: Olympia v koedici s Karolinum, Praha,1991.
Kostenmeyer. G., *Strength and endurance training for rock climbing*, Training in sport climbing, BMC, Plas y Brenin, 2000.
Kosstermayer, G., *Principles of climbing – a review of climbing technique*, 2nd International Conference on Science and Technology in Climbing and Mountaineering, University of Leeds, 2002.
Kovář, R., Blahuš, P., *Aplikace vybraných statistických metod v antropomotorice*, 1. vydání Praha: UK-Karolinum, 1989.
Kovář, R., *Metodický dopis: Testy a normy základní pohybové výkonnosti*, Ústřední kulturní dům železničářů , Praha, 1986.
Meloun, M., Militký J., *Kompendium statistického zpracování dat*, 1. Vydání Praha: Akademika, 2002.
Měkota, K., Blahuš, P., *Motorické testy v tělesné výchově*, 1. vyd. Praha: SPN, 1983.
Měkota, K., Kovář, R.a Štěpnická, J., *Antropomotorika II*, 1. vyd. Praha: SPN, 1990.
Mermier, Ch., M., *Physiologigal and anthropometric determinants of sport climbing performance*, Br Journal Sport medicin 2000.
Mermier, Ch., M., *Energy expenditure and physiological response during indoore rock climbing*, Br Journal Sport medicin, 1997.
Nachbauer, W., *Étude sur les Caractéristiques motrices spécifiques des grimpeurs de haut niveau*, Dupuy, Ch. (editors) Actes du Colloque, E.N.S.A Chamonix,1989.
Neuman, J., *Cvičení a testy obratnosti, vytrvalosti a síly*, 1. vydání Praha, Portál, 2003.
Pedersen, L., *Physiological mechanisms of fatigue in climbing and how to prolong time to fatigue with anaerobic traning*, Training in sport climbing, BMC, Plas y Brenin, 2000.

Procházka, V. a kol. Horolezectví, 1. přep. vyd. Praha : Olympia ,1990.
Rotman, I., Horolezectví, HELLER. J. a kol., Fyziologie tělesné zátěže II.: Speciální část – 3. díl, 1. Vyd., Praha, Karolinum, 1996.
Schmidt, R.a., Motor learning and performance, From principles to practice. Champaign, III, Human Kinetic Books ,1991.
Smith, M., On the Edge: Training Neil Carson, London, 1998.
Tichý, M., Antropometrické charakteristiky sportovních lezců, Dipl. práce, ved. práce, L. VOMÁČKO, Praha, UK FTVS, 2001.
Tefelner, R., Trénink sportovního lezce, 1. vydání Brno, Datis, 1999.
Ullrich, D., Rozvoj silových schopností sportovních lezců v rámci speciálního tréninku, Dipl. práce, ved. práce, L. Vomáčko, Praha, UK FTVS, 2001.
Vágenknecht, P., Didaktika sportovního lezení v tělesné výchově na středních školách. Dipl. práce ved. práce L. Vomáčko, Praha: UK FTVS, 2000.
Vojtík, P., Posouzení hladiny kyseliny mléčné v krvi při zatížení a výkonnosti u sportovních lezců. Dipl. práce, ved. L. Vomáčko, Praha: UK FTVS, 2002.
Vomáčko. S., Boštíková, S., Lezení na umělých stěnách. Praha, Grada, 2003.
Vrábel, F., Horolezectví: základní programový materiál. 1.vyd. Praha ČSTV, 1987.
Watts, P. B., Martin, D., Durtschi, S., Anthropometric profiles of elite male and female competitive sport rock climbers, Br. J. sports Sci, 11, 1993.
Watts, P., et. al. Anthropometry of young competitive sport rock climber, 2nd International Conference on Science and Technology in Climbing and Mountaineering, University of Leeds, 2002.
Watts, P., et. al. Metabolic Response During Sport Rock Climbing and the Effects of Active versus Passive Recovery, Journal Sport Med., 2000.
Watts, P., et. al. Acute changes in handgrip strength, endurance and blood lactate with sustained sport rock climbing, The Journal of sport medicine and physical fitness, 1996.
Watts, P., Rock Climbing 1. ed. Champaing : Human Kinetic, 1996.
Zvára, K., Biostatistika, Karolinum, Praha, 2001.
Zvárová, J., Biomedicínská statistika, I. Základy statistiky pro biomedicínské obory, Karolinum, Praha, 1998.

MONITORING HEART RATE DURING ACCLIMATIZATION

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Abstract

The objective of our research was to determine differences in heart rate after the periods of acclimatization of various lengths, and differences in acclimatization between men and women. It is stated in the literature that in rest grown up women have a little higher heart rate than men. Besides, heart rate oscillations were established during acclimatization.

Our group of subjects consisted of 6 healthy women (age 25±4,7, height 165,2±6, mass 61,4±7,4) and 4 men (age 36,5±15,6, height 179±7,8, mass 77,4±5,9). Acclimatization was conducted at an altitude between 3200 and 6000 m for a period of 13 days. Heart rate was measured by means of Polar measuring devices on the 9th and 13th day of the acclimatization period in Huaraz at an altitude of 3200 m in rest (sitting position) and in active state (step test on a 20 cm high stepper).

Step test
3 min of rest (sitting on the stepper)
5 min of step test with a frequency of 60 Hz
3 min of rest (sitting on the stepper)
5 min of step test with a frequency of 80 Hz
3 min of rest (sitting on the stepper)

Differences in heart rate between both genders were measured during the first measurement in the rest period between the 60 Hz and 80 Hz step tests and between single frequencies of a step test. Statistically significant differences in all monitored parameters were found, in women as well as in men, between the measurements Huaraz-1 and Huaraz-2. It is known from the literature that heart rate changes oscillate during acclimatization. It is not clear, however, why average heart rate values reach higher values during longer acclimatization periods. The reason may lie in over-exhaustion as a consequence of longer active stay at higher altitudes.

Introduction

Adaptation of human organism to higher altitudes is called acclimatization. All mountain climbers that climb the mountains at higher altitudes have to face it. A period of acclimatization ranges between one and three weeks. It varies from per-

son to person, and depends on the altitude this person wants to reach. The higher one climbs, the longer acclimatization one needs. The processes of adaptation to higher altitudes can be monitored by means of various physiological parameters, i.e. heart rate, pulse volume, blood pressure, use of oxygen, and other biochemical variables (Boushel et al., 2001; Bogaard et al., 2002). Monitoring of most of these variables is limited to laboratory measurements, due to objectivity of measuring methods. As a rule, heart rate in rest increases with altitude until it reaches a certain value at which it remains more or less constant (Antezana et al., 1994; Reeves et al., 1987). In the field, however, the results are somewhat different (Pavlidis et al., 2005; Mazzeo et al., 1998). Besides, heart rate oscillations were established during acclimatization. On the other hand, maximal heart rate under the same load decreases with the increase in altitude (Antezana et al., 1994; Reeves et al., 1987). It is stated in the literature that in rest grown up women have a little higher heart rate than men.

Our purpose was to determine differences in heart rate after the periods of acclimatization of various lengths, and differences in acclimatization between men and women.

Methods

Sample group

Our group of subjects consisted of 6 healthy women (age 25±4,7, height 165,2±6, mass 61,4±7,4) and 4 men (age 36,5±15,6, height 179±7,8, mass 77,4±5,9), who were beforehand well acquainted with the test.

Description of the test

Acclimatization was conducted at an altitude between 3200 and 6000 m for a period of 13 days (Figure 1). Heart rate was measured by means of Polar measuring devices on the 9th and 13th day of the acclimatization period in Huaraz at an altitude of 3200 m in rest (sitting position) and in active state (step test on a 20 cm high stepper) (Figure 2).

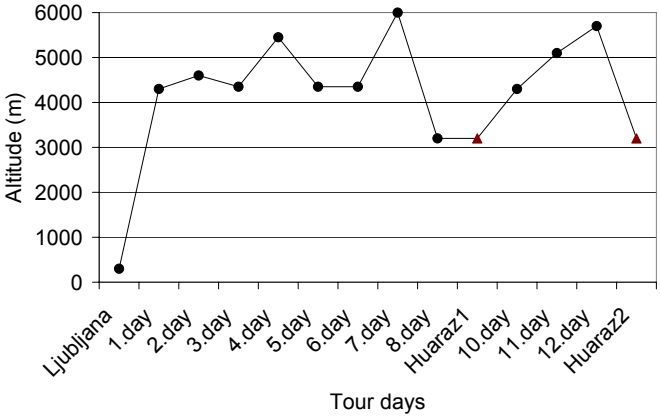

fig. 1: Tour altitude profile.

fig. 2: Position of the subjects during step test.

Methods of data analysis

Data were processed with SPSS for Windows software:

Basic statistical parameters were calculated for each variable,

For a comparison of the variables among men and women t-test for independent samples was used,

For a comparison of variables among the measurements t-test for paired samples was used.

Results

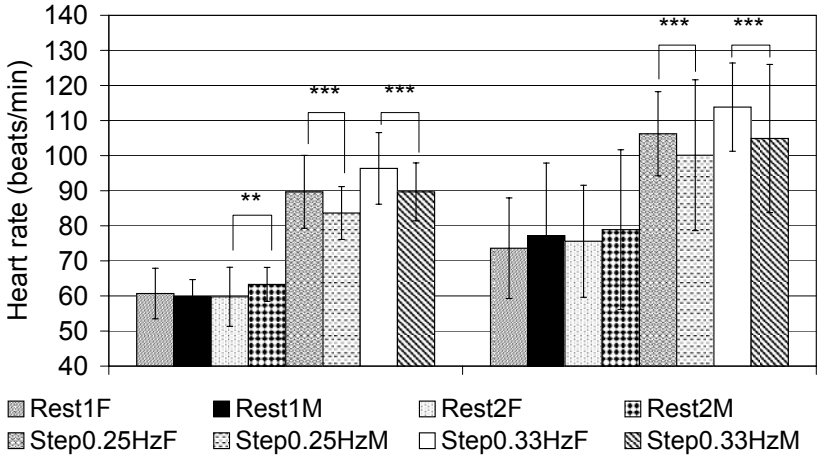

fig. 3: Arithmetic means and standard deviations of average heart rate values in rest and during 0.25 and 0.33 Hz step test between women and men. *** P<0.001; * P<0.05.

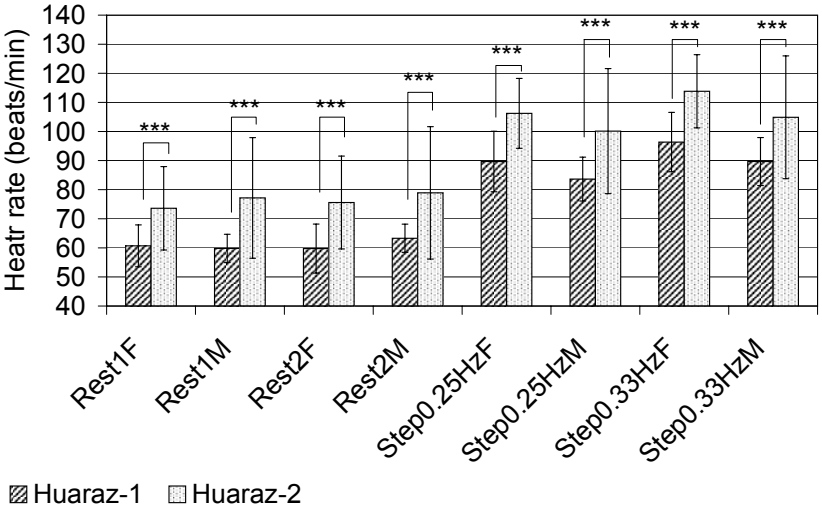

fig. 4: Arithmetic means and standard deviations of average heart rate values in rest and during 0.25 and 0.33 Hz step test between Huaraz1 and huaraz2. *** P<0.001.

Discussion

The results show statistically significant (P=0.006) differences in heart rate in rest between men and women only in the second rest period in Huaraz 1 (Fig. 3). Heart rate in men was higher, which is somewhat surprising, as we know that grownup women have a little higher heart rate in rest (De Vris, 1976). Heart rate in men after step test had decreased more slowly and in a three minute long lasting rest period did not reach the starting values. This, however, is not true for the measurement in Huaraz 2, where hart rate dropped back to the starting values. This indicates that the resting period was long enough (Fox et al., 1981). Step tests with frequencies 0.25 and 0.33 Hz in Huaraz 1 and Huaraz 2 show statistically significant differences (P=0.000) in heart rate. In both cases the values were higher in women than in men (Figure 3). It is likely that both step tests represented a higher load for women than they did for men. A possible conclusion is that men were a little better physically prepared than women. As a consequence, the reaction of heart rate to load was lower in men than in women.

We expected heart rate after longer acclimatisation to be lower or at least equal to the heart rate after shorter acclimatization. This, however, was not the case. Heart rate in rest between the measurements in Huaraz 1 and Huaraz 2 differs statistically significantly (P=0.000) (Fig. 4) in women as well as in men. The measurement in Huaraz 2 shows higher heart rate. Heart rate during step tests with 60 and 80 Hz during measurements in Huaraz 2 were statistically significantly (P=0.000) higher than during measurements in Huaraz 1 (Figure 4). After longer acclimatization period our subjects were perhaps more exhausted than after a shorter acclimatization period, and heart rate raised as a reaction to exhaustion. Oscillation in heart rate during acclimatization was measured also by Pavlidis et al. (2005) and Mazzeo et al. (1998). Raise in average heart rate in accordance with raise in altitude was observed by the researchers who conducted the measurements in a hypobaric chamber (Reeves et al., 1987; Yamamoto et al. 1996). Similar results were obtained by Antezana et al. (1994), who conducted the measurements in a laboratory at an altitude of 6.542 m.

Conclusions

As we did not measure any other physiological parameters we cannot explain the differences in heart rate between two measurements at the same altitude. We can only conclude that a possible cause lies in over exhaustion as a consequence of longer active stay at higher altitudes. Human organism reacts with higher heart rate also to over-training (Willmore et al., 1994). We are aware of the drawbacks of measurements carried out in the field. Changes in heart rate are influenced by various factors, which again depend on environmental factors, such as weather conditions (De Vris, 1976). Additional measurements will be needed for the assessment

of the heart rate measured in the field as an aid for determining the degree of acclimatization while mountaineering and mountain climbing in higher altitudes.

References

Antezana, A. M., Kacimi, R., Le Trong, J. L., Marchal, M., Abousahl, I., Dubray, C. & Richalet, J. P. (1994). *Adrenergic status of humans during prolonged exposure to the altitude of 6,542 m*. Journal of Applied Physiology, 76 (3): 1055–1059.

Boggard, H. J., Hopkins, S. R. , Yamaya, Y., Niizeki, K., Ziegler, M. G. & Wagner, P. D. (2002). *Role of the autonomic nervous system in the reduced maximal cardiac output at altitude*. Journal of Applied Physiology, 93: 271–279.

Boushel, R., Calbet, J. A. L., Rådegan, G., Sondergaard, H., Wagner, P. D., & Saltin, B. (2001). *Parasympathetic Neural Activity Accounts for the Lowering of Exercise Heart Rate at High Altitude*. Circulation, 104: 1785

De Vris, H. (1976). *Fiziologija fizičkih napora u sportu i fizičkom vaspitanju*. Beograd: Republička zajednica fizičke kulture SR Srbije, Biblioteka "Teorija: metodika sport".

Fox, E., Bowers, R., & Foss. L. (1981). *The Physiological basis of pysical education*, third edition. Philadelphia: Saunders college.

Mazzeo, R. S., Child, A., Butterfield, G. E., Mawson, J. T., Zamudio, S., & Moore, L. G. (1998). *Catecholamine response during 12 days of high-altitudeexposure (4,300 m) in women*. Journal of Applied Physiology, 84 (4): 1151–1157.

Pavlidis, M., Stupp, T., Georgiadou, E., Moschos, M., & Thanos, S. (2005). *Intraocular pressure changes during high-altitude acclimatization*. German Journal of Ophthalmology, Springer-Verlag.

Reeves, J. T., Groves, B. M., Sutton, J. R., Wagner, P. D., Cymerman, A., Malconian, M. K., Rock, P. B., Young, P. M., & Houston, C. S. (1987). *Operation Everest II: Preservation of cardic function at extreme altitude*. Journal of Applied Physiology, 63 (2): 531–539.

Yamamoto, Y., Hoshikawa, Y., & Miyashita, M. (1994). *Effects of acute exposure to simulated altitude on heart rate variability during exercise*. Journal of Applied Physiology, 81 (3): 1223–1229.

Willmore, J.H., & Costill, D.L. (1994). *Physiology of sport and exercise*. Champaign Illinois. Human Kinetics.

AN ELECTROMYOGRAPHIC STUDY OF THE SCAPULAR MUSCLES IN STATIC POSITIONS IN SPORT CLIMBING

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Abstract
Aim: To show and compare the intensity of involvement of scapula stabilisers during the isometric contraction in five positions of the upper limb which are characteristic for static positions in sport climbing.

Methods: Five children (10–14 years) experienced in sport climbing participated in this study. The surface electromyography was measured on the chosen scapula stabilisers in five positions of the upper limb in static climbing positions. The measured data were expressed as a percentage of the maximal voluntary contraction.

Results: Despite the considerable inter-individual variance a high activity of the medium and lower part of musculus trapezius was reported in selected positions of the upper limb.

Keywords
Surface electromyography, scapula stabilisers, sport climbing

Introduction
Sport climbing has developed into a popular recreational and competitive activity recently and has obviously divided from mountaineering. This activity has became the objective of studies which aim was to categorize sport climbing according to physiological (Billat et al,1995; Booth et al, 1999; Mermier et al., 1997, 2000, Watts B., 2004), biomechanical (Quaine et al. 1997, Kostermayer et al, 2001) and anthropometrical (Grant et al, 2001; Watts et al, 1993) aspects. There have also been attempts to prove the benefits of the activity in rehabilitation (Heitkamp, 1999; Jacob, 2003).

Climbing is characterised by the altering dynamic and static phases. Static positions enable the climber to balance the body posture and to anticipate the following movements. Static positions are longer with the increasing route difficulty (Mermier et al, 1997) and last between 37% (Billat et al., 1995) and 70% (Guidi, 1999) of total climbing time. The new unknown routes (OS style) demand also a greater part of balancing and movement anticipation and therefore longer static

phases. During some climbing games we can expect a predominant part of static positions of the total climbing time.

We were interested if climbing could help to stabilise the shoulder girdle. The elder publications mention that rock climbing activates scapula adductors (Lesur, 1942).

The aim of our study was to verify the involvement of scapula stabilisers in chosen static positions in sport climbing by using surface electromyography.

Methods

Subjects: Three boys and two girls participated in this study. All had two years of experience with sport climbing on a climbing wall and regularly trained 2 times per week. Table 1 shows the basic characteristics of participants.

subject	sex	Age [years]	height [cm]	Body mass [kg]
1	f	10	143,2	31,6
2	m	14	169,4	46,4
3	m	14	168,8	43,1
4	m	13	156,7	39
5	f	10	136	28,3

table 1: Characteristics of subjects

The personal and medical anamnesis and kinesiology examination were first realized with all participants. No injury of upper limbs, cervical or thorax column was reported and the participants were found as health individuals. All participants were right-handed. All children and their parents agreed with the survey.

Materials

Surface EMG was recorded by the 8 channel device Myosystem 1400 (Noraxon, U.S.A.). The raw EMG were filtered (10–500 Hz cutoff, zero lag eighth order Butterworth filter) and later sampled by the 12bit analoguely – by the number converter on the sample frequency of 1 kHz. This instrument is not equipped by so called Notch filter for filtering the frequency of electricity circuit (50 Hz for Europe). The EMG activity was scanned by 4 bipolar electrodes where the signal is detected by two active electrodes and one ground electrode. When processing the record the software works with the difference of potentials brought from active electrodes and the difference is intensified in the amplifier.

The electrodes with the diameter 10 mm (the proper sensing surface with the diameter 3,8 mm) were placed on the purified skin above the muscle belly. Four EMG recording were used to pick-up the electrical activity of muscles. Cables lead-

ing from the electrodes to the device were fixed to the body by the tape in order that they could not cross or touch each other.

Musculus serratus anterior and musculus trapezius have an essential importance to stabilise the scapula and subsequently the shoulder girdle. Due to the reason of their surface location these muscles are available to the measurement of surface EMG.

Localization of electrodes:

- M. serratus anterior: electrode was placed on the muscle belly 2 cm from the muscle attachment on the 6th rip; second electrode dorsocranially below the muscle fibres.
- M. trapezius - pars descendens: electrode in the middle of the distance between acromion and C7, referential electrode: mediocranially in the direction of fibres
- M. trapezius - pars medialis: active electrode: 1 cm laterally from processi spinosi of thorax spine at the level of Th5; referential electrode: laterally in the direction of fibres
- M. trapezius – pars ascendens: active electrode was placed on the join of angle inferior scapulae and processus spinosus Th9 mediocaudally from the angle inferior scapulae. Referential electrode: mediocaudally in the direction of fibres.

Ground electrode was placed in the area crista illiaca on the left side.

fig. 1: Photo of the localization of electrodes for m. serratus anterior

fig. 2: Photo of the localization of electrodes for m. trapezius

Description of the body posture and upper limb position on a climbing wall

Five positions of the upper limb were chosen for EMG measurement. These positions represent five different climbing postures which are commonly used. To ensure the same conditions for all participants, following instructions were set for each position:

All grips were performed by the right hand. The left arm hanged down alongside the body during the measurement.

Position 1
Grip of horizontal hold at the level of shoulder joint; forearm: complete pronation; elbow joint: complete flexion
Position 2
Grip of horizontal hold; forearm: complete pronation, elbow joint: 90° flexion, shoulder joint: 90° abduction, complete external rotation
Position 3
Grip of horizontal hold; forearm: complete pronation, parallel with medial line of body, shoulder joint: 60° abduction, complete external rotation
Position 4
Grip of vertical hold; forearm in complete pronation, perpendicularly on medial line of the body, elbow joint: extension; shoulder joint: 90° abduction, complete external rotation
Position 5
Grip of horizontal hold; forearm: complete pronation, parallel with medial line of body, elbow joint: maximal extension; shoulder joint: complete elevation of the upper limb. The grip was above the shoulder joint in his vertical line.

fig. 3: Positions 1–5

For all positions, there were chosen the same holds enabling the open grip with all four fingers and with the thumb in adduction.

For the position of feet, we have been looking for the ideal position which is not exigent for the hip flexibility and which enables to carry the most part of body mass on feet. Based on experience, we have found this position of feet: distance between toeholds was on horizontal axe 10/23 of length of the body height and the left toehold was 10/55 of length higher then the right toehold.

The position of the right down limb was following: abduction and small external rotation in hip joint, extension in knee joint, plantar flexion in ankle joint. Left limb was in flexion, external rotation and abduction, knee joint in flexion, ankle joint in plantar flexion.

The accent was made, that the pelvis was hold to the wall at the closest, the body was not in rotation or lateroflexion and that the medial axe of the body passed through the middle of the distance between legs.

Tests of maximal voluntary contraction

EMG activity of muscle by the isometric contraction was expressed in % of MVC. The MVC was determined for chosen muscles by the Kendall muscle test (Kendall, 1949).

Results

The data were worked up out of an integral of electrical activity for two seconds steady isometric contraction in different upper limb positions. Due to a little number of participants and big inter-individual differences, we did not use the basic descriptive statistics (mean and standard deviation).

	%	%	%	%	%
1	6,38	5,22	5,62	7,2	16,29
2	38,25	11,36	20,78	38,45	70,1
3	60,48	15,96	25,87	38,71	27,59
4	10,09	1,9	9,19	7,18	5,62
5	6,55	4,06	6,25	4,48	13,91

table 2: Activity of m. serratus anterior – percentage of MVC

	%	%	%	%	%
1	36,13	35,89	35,54	57,69	28,78
2	28,05	11,99	23,29	40,28	4,62
3	9,69	6,43	4,79	17,76	1,53
4	10,75	10,14	4,35	34,76	1,91
5	14,83	5	9,16	15,39	9,04

table 3: Activity of m. trapesius superior – percentage of MVC

	%	%	%	%	%
1	26,24	45,06	40,04	74,49	54,48
2	39,9	93,04	89,99	95,3	92,41
3	17,19	20,61	13,54	17,33	21,83
4	37,65	21,25	15,59	22,73	34,75
5	18,69	70,99	19,01	63,21	130,65

table 4: Activity of m. trapesius medialis – percentage of MVC

	%	%	%	%	%
1	34,33	64,35	39,26	52,22	88,14
2	230,39	39,65	83,66	130,67	56,07
3	62,16	70,42	43,17	68,24	71,05
4	136,92	56,9	63,32	86,52	73,34
5	136,88	61,06	91,12	68,27	101,36

table 5: Activity of trapesius inferior – percentage of MVC

Discussion

We supposed that the scapula stabilisers would be activated in our chosen positions. It has been shown that the m. trapezius inferior activation was very important (more than 50% of MVC in all positions by almost all participants). Decker and Hintermeister (1999) consider the muscle activation greater than 20 % of MVC as moderate and greater than 50% as important. The activation of m. trapezius medialis was moderate or important also at nearly all participants in all positions. The positions with the highest muscle fibres activation were number four and five (with outstretched arms).

Only two climbers activated more m. serratus anterior. The common positions were No. 1 and No. 5, the positions with the holds in the vertical line of shoulder.

Musculus trapezius superior seems not to have been activated. Only one person achieved greater values. We can see at this person a lower activation of m. trapezius inferior in the positions with a greater activation of m. trapezius superior which shows a different movement pattern and muscle solicitation. Due to the standard position for each participant, the chosen positions did not have to be comfortable for everyone. In natural conditions we supposed another location of the centre of gravity which would certainly change the muscle activation.

The other muscle activation will certainly be on an overhanging wall or on the positively leaned surface, with different holds and used grips, with other participants, in climbing movement etc.

We suggest that the positions for standard manual test (MVC) can be but are not necessary optimal to the maximal involvement of the selected muscle into the function by different climbers. This fact can be caused by inter-individual variability of movement patterns. The recruitment of muscles or mechanical functional unity is never the same by natural physical activity by different climbers.

It seems better to use the term ‘referential value’ instead of MVC because some results attained more then 200 % of this referential value. Lear and Gross (1998) have the same idea that we can not detect the MVC in the standard manual test. It is also disputable if we can use the referential value that was specified by sitting and tests of climbing positions were realized when standing.

The surface EMG can not enable the measurement of mm. rhomboidei which are important scapula stabilisers. We could not ensure that their activity was not taken by the measurement of m. trapezius medialis. We have also to emphasize that the size of electrodes permits to scan only a part of the active muscle fibres. No electrode provides the measurement of the whole muscle and from the activity of the muscle part we cannot judge the activity of the whole muscle.

With all these methodological problems we should interpret our results very carefully.

Conclusion

The aim of this study was to determine the involvement of chosen scapula stabilisers by an isometric contraction in five climbing positions on an artificial climbing wall.

The results have shown a great variability but we can see a common trend: an important recruitment of a low and middle part of m. trapezius. These results are very interesting from the point of view of health oriented physical education and rehabilitation. If we wanted to use climbing activities with such objectives a well educated instructor would be needed.

The EMG measurement poses a lot of methodological problems. We have mentioned in our discussion the essential ones which can invoke a lot of questions about the interpretation of the results.

We have stated these points to the future research. New proceedings to find referential value (or MVC) are demanded. An EMG activity during climbing movement or in other body positions will certainly provide interesting data. Measurement with different people could lead to generalization of results.

References

Billat, V. et al. (1995). Energy specificity of rock climbing and aerobic capacity in competitive sport rock climbing. *J Sports Med Phys Fitness*, 35, 20–24.

Booth, J.; Marino, F.; Hill, C.; Gwinn, T. (1999). Energy cost of sport rock climbing in elite performers. *Br J Sports Med*, 33, 14–18.

Decker, M.J; Hintermeister, R.A; Kenneth, J.F. et al. (1999). Serratus anterior muscle activity during selected rehabilitation exercises. Am J Sports Med, 27, 6, 784–791.

Francová, J. (2005). *Měření elektrické aktivity vybraných stabilizátorů lopatky v polohách horní končetiny charakteristických pro sportovní lezení.* Praha: FTVS UK .

Grant, W., et al. (2001). A comparison of the antropometric, strength, endurance and flexibility charakteristics of female elite and recreational climbers and non-climbers. *The Journal of Sports Sciences*,19, 499–505.

Guidi, O. (1999). *Etude de la fatigue musculaire locale en escalade sportive dans une situation de test en laboratoire et sur structure artificielle d'escalade. Approche eléctromyographique.* Rapport de recherche DEA (Sous la direction de J. F. MARINI). Marseille: Faculté des sciences des sports.

Heitkamp, H.C; Mayer, F.; Böhm, S. (1999). Effekte eines Klettertrainings im Vergleich zu isokinetischem Krafttraining auf die Wirbelsäulenstabilisierende Muskulatur. *Aktuelle Rheumatologie*, 24, 40–46.

Jacob, U. (2003). Therapeutisches Klettern zur Stabilisierung der Wirbelsäule und der oberen Extremitäten. *Physiotherapie med*, 5, 5–10.

Kendall, H.O; Kendall, F.P. (1949). *Muscles testing and function*. Baltimore: Williams and Wilkins.

Köstermayer, G. (2001). P*eak Performance, klettertraining von A-Z*. Schörndorf: LUMA - Verlag . ISBN 3-930650-01-0

Lear, L.J.; Gross, M.T. (1998). An electromyographical analysis of the scapular stabilising synergists during a push-up progression. *J. Orthop. Sports. Phys. Ther*, 28, 3, 146–157.

Lesur, J. (1942). *Manuel de Gymnastique correctivest et de Gymnastique ortopédique*. Paris: Masson et compagnie.

Mermier, C. M. et al. (1997). Energy expenditure and physiological response during indoor rock climbing. *Br J Sports Med*, 31, 224–228.

Mermier, C. M. et al. (2000). Physiological and anthropometric determinants of sport climbing performance. *Br J Sports Med*, 34, 359–366.

Quine, F.; Martin, L., Blanchi, J-P. (1997). The effect of body position and number of supports on wall reaction forces in rock climbing. *J Appl Biomechanic*, 13, 14–23.

Watts, P.B.; Martin, D.T.; Durtschi, S. (1993). Anthropometric profiles of elite male and female competitive sport rock climbers. *J Sports Sci*,11, 113–117.

Watts, P.B. (2004). Physiology of difficult rock climbing. *Eur J Appl Physiol*, 91, 4, 361–372.

5. ANNEXES

THE WORKSHOP: CHILDREN IN MOUNTAINEERING AND CLIMBING

Workshopleaders:
Thomas Zwahlen, mountain-guide and chief trainder of Friends of Nature Trainersschool, Switzerland
Anita Rossel, 'Erlebnisspädagogin' and coordinator of Friends of Nature-CH Trainersschool, Switzerland
Wilfried Meulenbergs, chief-instructor Mountaineering Flemish Trainersschool and Flemisch Friends of Nature, Belgium

Participants:
15 participants on IMOSC, with various experiences in training and practicing climbing and mountaineering. Some of them with youngsters.

Items of discussion:
During the 1,5 hrs workshop different issues that were brought up by the participants were discussed and finally also commented by the workshop leaders.

Three main issues that were discussed:
- How do we make climbing-instruction attractive?
- How to find the balance between 'performance' and 'fun'?
- What is important in the training-for-trainers?

This report is not the prices minutes of the whole discussion, but a summary of the conclusions. The first two questions we tackle under the heading of two 'age-groups', the third question is tackled separately.

In theage-group 10–14 years, 'fun' is the focus.
Some examples:
- climbing games to learn climbing techniques
- making camp-fire to cook on is big fun
- only climbing in the morning: afternoon is for playing
- building rope-bridges ('Nepal'-bridge) is big fun
- knitting useful things, like a chalk-bag or picnic-bag
- singing is very important; a camp-song is perfect for the 'tribe-building'
- a story, or theme can make a camp more fun; (also good to include stories about history/legends of the region where the camp takes place)

We never put pressure on the kids: if they don't like it, it does not work. Think about your approach (and how to change it) before you start thinking that these kids are 'not motivated'. Kids need to feel good. Therefore trainers need not only to be experienced mountaineering pro's, but at the same time very competent (and trained!) teachers/psychologists.

What to do if a child wants to 'stop'?

In the first time, it is a matter of preventing this situation: see that you have a good programme that keeps them going. It therefore is important to be with at 2 trainers for a group of 6 children. Trainers have to have an 'eye' for children, evaluate how they are doing, have attention for every single child. This is impossible if you have to do this on your own.

Some 'tricks' that work:

- 'free-ticket': in the CH camps, kids get 1 day 'off' they can choose in the week and on that day they don't need to participate in all the activities but can stay in the camp, help in the kitchen, read, ... (they do not use this day always, but they are happy to know they 'have' it!)
- make clear what the goal of the activity or tour is, so they know 'where' they are going to
- nothing more exiting than a 'crystal-hunt' that can be initiated by hiding the crystal yourself
- ask every child to express and write down its own goal for the camp and keep on remembering him as a way of motivation
- keep in mind the difference between girls and boys: girls can have endless fun with their friends, boys like 'big adventures'.

The concept changes around the age of 13–14. These youngsters need more variation, because they get bored very easy. They are not that easy to 'trick' with the above mentioned methods. In this age they will decide whether they will continue climbing/mountaineering, or quit it and go for another (less demanding...) hobby or sport.

You get two groups: those who want to go far in training for the competition and performance climbing (rocks and indoor), and those who are in for mountaineering.

The first group has a demand for good technical training and needs to feel progress in their performance. This is easy to achieve till in a short time till prox. grade 6a. From then on they need to be motivated to train extra.

The second group is less in for performance but seek the 'big adventure'. As a trainer you need to make them **dream**: let them feel the trill of the big mountaineer-

ing by showing your slides, telling your stories, letting them live their big adventures too. Big climbs with bivouac are a 'top'.

Special attention is to be taken for the specific needs of girls, if we want them to keep on liking to take part in climbing and mountaineering. Thé 'trick' that works best, is having female trainers in the team. Not all activities need to be sex-mixed. It is important to have possible choices (mixed and not mixed).

Training for trainers

Trainers for mountaineering and climbing have a very high responsibility. Therefore selection is very strict.

In the first place these trainers must be active and passionate climbers/ mountaineers them selves. It is important that they can – during a training and while working with youngsters – forget about their personal mountaineering ambitions. While working as a trainer, they need to have their eyes on the kids! To reach this, it is needed that these trainers also go to the mountains, go climbing, for their own in their private holidays, on their own. Trainers that only practice their sport while working as a trainer are not suited for the job.

Trainers need to be trained and experienced in climbing and mountaineering (they need to be 'ahead' of the youngsters that they train), but as well, and as much in psychology and didactics. One can learn a lot, but one has to have talent: both for mountaineering as for working with people.

Future trainers are therefore selected in the group talented climbers and mountaineers within the Friends of Nature -mountaineering groups.

The Suisse, resp. Belgian state, sets up a regulated state system that trains and certificates the trainers. For this they involve all the recognised alpine-clubs of the country: in CH that is the SAC (Suisse Alpine Club) and NF (Naturfreunde Schweiz) in Belgium it are the Belgian Alpine Club, NatureFriends SportsFederation and the Flemish Mountaineering and Speleology Federation.[1]

In both countries there are 3 levels of trainers, beginning from a 'Initiator' or 'Junior-Trainer' (minimum age 18) up to 'Senior Trainer' (from 24 years old). They get a course and need to do a lot of trainee-ship (with evaluation) in the alpine-clubs.

Trainers with the highest qualification can run camps and courses on their own, and there is supervision by the professional mountain guides (Experts) that work in the alpine clubs.

[1] More about this issue and on the way the CH and B workshop leaders work in this, can be found on: www.nf-bergsportverband.ch, www.bergstijgers.org, www.climb.bergstijgers.org, www.baspo.ch (go to 'Jugend und Sport' and 'Bergsteigen'), www.bloso.be (go to 'VTS' and 'Bergbeklimmen') (From these last websites course-curriculum can be downloaded)

Certification is always temporary: trainers need to practice and go yearly on rehearsal courses.

(we ran out of time and could not go deeper into this important topic; therefore the participants of this workshop recommend that in next conference there would be more time for the theme of 'training-for-trainers')

ANNEX 1.

A critical overview of French social scientific research on rock climbing and mountaineering

I – MOUNTAINEERING

I — 1 Global approach of mountaineering

Enthusiasts, journalists, scholars

ALAIN P. (1987), Alpinisme et compétition, Arthaud, Paris.

ASSELIN J-M. (1988), Le nouvel alpinisme, Nathan, Paris.

BELDEN D. (1994), L'alpinisme : un jeu ? Les notions de jeu, de libre et de nature dans le discours de l'alpinisme, Paris, Collection « Espaces et Temps du sport », L'Harmattan, 126 p.

BALLU Y. (1984), Les alpinistes, Arthaud, Paris.

CHAUDET D. (1991), L'alpinisme, Techniprint, Annecy.

CHATELLUS A. de (1980), Alpiniste est-ce toi, Stokine.

ENGEL C-E. (1950), L'histoire de l'Alpinisme, l'approche de la montagne du XVIIIčme ŕ nos jours, je sers, Paris.

FRISON-ROCHE R. et JOUTY S. 1993 (1964), Histoire de l'Alpinisme, Paris, Arthaud, 337p.

JOUTY, S. (1985), «L'histoire de l'Alpinisme est une énigme «, in Culture technique, nº13.

JOUTY S. et ODIER H. (1999), Dictionnaire de la montagne, Paris, Arthaud, 720p.

PERES M. (1987), L'alpinisme, Paris, PUF, Que-Sais-Je ?, 128p

SECRET J. (1943), L'alpinisme, éd. Delmas, 1ère réédition de l'ouvrage de 1937, Bordeaux.

University graduates

BESSIERE P. (1967), L'alpinisme, Coll. Que sais-je, Presses Universitaires de France, Paris.

DIENOT J., THEILLER D. (1999), Les nouveaux loisirs sportifs en montagne, les aventuriers du quotidien, Maison des Sciences de l'Homme d'Aquitaine, Université de Pau et des Pays de l'Adour, Pau.

GAZIER F. (1949), Les sports de montagne, PUF Que sais-je, Paris, 127p

LEJEUNE D. (1992), « Jeu, utilité et gratuité dans l'histoire de l'alpinisme français », in T. Terret (éd.) Jeux et sports dans l'histoire, Tome 2 « Pratiques Sportives », Paris, Comité des Travaux Historiques et Scientifiques, p. 147–160

MESTRE M. (1996), Histoire de l'Alpinisme, Les Alpes, Edisud, Aix-en-Provence.
R AYMANN A. (1979), Evolution de l'alpinisme dans les Alpes Françaises, Ed. Slatkine.

I – 2 History and mountaineering

I – 2 – 1 Social and historical analysis of mountaineering

HOIBIAN O., DEFRANCE J. (2002), Deux siĕcles d'alpinismes européens, L'Harmattan, Paris.
HOIBIAN O. (1995), « Le champ des pratiques sportives : espaces préservés ou formes d'expression de systĕmes de domination. L'éclairage du « monde de l'alpinisme » », in Pigeassou C. (ss la dir.), Entre tradition et modernité, Actes du colloque « Sport, culture Tradition », AGDE 1993, Le CRES.
HOIBIAN Olivier (1997), Au-delŕ de la verticale ... L'alpinisme : sport des élites ou sport pour tous ? Les enjeux de la définition légitime d'une pratique. Contribution ŕ la sociogénčse du champ des activités physiques et des sports, thčse, Paris-Sud Orsay, 2 volumes.
HOIBIAN O. (2000) Les alpinistes en France – 1870–1950, une histoire culturelle, Coll. Espaces et temps du sport, L'Harmattan, Paris.
JOUTARD Ph. (1988), « La haute montagne, une invention protestante », Monde Alpin et rhodanien, 1º et 2º trimestres, p. 124
LEJEUNE D. (1988), «Pour une histoire de l'alpinisme en guise de repčres», in Sport/Histoire nº2, pp. 55–72.
LEJEUNE D. (1988), Les alpinistes en France (1875–1919). Etude d'histoire sociale, étude de mentalité, Mémoires de la section de géographie, nº 14, Paris, C.T.H.S, 271 p.
LEJEUNE D. (1992), «Jeu, utilité et gratuité dans l'histoire de l'alpinisme français», in Terret, T., Jeux et sports dans l'histoire, Pratiques sportives, Tome 2, Paris, CTHS, pp. 147–160.
VEYNE P. (1979), L'alpinisme, une invention de la bourgeoisie, Revue d'Histoire, nº11, Le seuil/la recherche, Paris.

I – 2 – 2 Study of social and historical elements of mountaineering

BOURDEAU Ph. (1993). Dalla citŕ alla montagna: la Société des touristes du Dauphiné. In L'uomo e le alpi, Vivalda Editori, Torino, pp. 97–100.
HOIBIAN O. (2000), Les caravanes scolaires : un projet éducatif inédit in A l'école de l'aventure, Pratiques sportives de plein air et idéologie de la conquęte du monde – 1890 ŕ 1940, Presses Universitaires du Sport, Voiron, pages 45– 54.
TAILLAND Michel (1996), Les alpinistes victoriens, thčse, Versailles/Saint Quentin-en-Yvelines, 2 tomes

TAILLAND Michel (1997), Les alpinistes victoriens, Presses universitaires du Septentrion, Lille. Grande Encyclopédie de la Montagne (1977–1979), Editions Atlas, Paris, 8 volumes.
TAILLAND M. (2001), « Ces gentlemen britanniques qui inventčrent l'alpinisme », in Mestre M. Tailland M. (ss la dir.), Hommes et montagnes, revue Babel, nº 5, faculté de Lettres, Toulouse, pp. 103–114.

Body themes

Hoibian O. (1999), « Le costume des alpinistes : la manič re de se vętir comme indicateur d'autonomisation », in L'histoire du sport, l'histoire des sportifs, ss la direction de J. M ; Delaplace, L'Harmattan, Paris, 1999, pp. 11–18
MESTRE M. (2005), « L'émergence du corps chez les alpinistes germanistes : de l'absence ŕ la survalorisation », in Le corps de l'alpin, ss la direction de Boëtsch G., éd. des Hautes-Alpes, GAP, 2005, pp. 223–238.
RASPAUD M. (2005), « L'alpiniste et son corps. XVIIIº – XIXº sičcles. Les débuts de l'alpinisme et la découverte des maux de l'altitude », in Le corps de l'alpin, ss la direction de Boëtsch G., éd. des Hautes-Alpes, GAP, pp. 205–223.
TAILLAND M. (2005), « Les alpinistes au temps de Victoria, du corps caché au corps en action », in Le corps de l'alpin, ss la direction de Boëtsch G., éd. des Hautes-Alpes, GAP, 2005, pp.239–256.

I – 2 – 3 Study of emblematic portraits and of historical facts

CORNELOUP J., Portrait d'un alpinisme : Patrick Bérhault, Universalia, 2005.
HOIBIAN O. (2003), « Les voyages en zigzag de Rodolphe Töpffer », in Mestre M. Tailland M. (ss la dir.), Le voyage initiatique en montagne, revue Babel, nº 5, faculté de Lettres, Toulouse, pp. 57–70.
LEJEUNE D. (1987), Les vainqueurs de l'Anapurna, L'histoire nº105.
LEJEUNE D. (1996), « Le cas de l'alpinisme et des alpinistes » in T. Terret (éd.) Histoire des sports, Paris, L'Harmattan, Espaces et Temps du Sport, p. 203–218
MESTRE M. et TAILLAND M. (eds.), 2001, Babel, nº5, « Hommes et montagnes », 258p.
MORIN M. (2000), Les alpinistes célčbres, Ed. Mazenod, Paris.
SEGOGNE H. de, COUZY H. (1975), Les alpinistes célčbres, L. Mazenod, Paris
ZUANON J. P. (2003), « La premič re ascension italienne au mont Viso (Piémont 1863), du voyage initiatique au symbole identitaire », in Mestre M. Tailland M. (ss la dir.), Le voyage initiatique en montagne, revue Babel, nº 5, faculté de Lettres, Toulouse, pp. 71–86.

I – 2 – 4 History and territory

ATTARD-MARANINCHI M.F. (2002), « L'alpinisme, facteur de cohésion sociale des ex-cursionnistes marseillais », in Hoibian O., Defrance J. (2002), Deux siĕcles d'alpinismes européens, L'Harmattan, Paris, pp. 23–42.
BOURDEAU Ph. (1988), Une mémoire alpine dauphinoise : alpinistes et guides de 1875 ŕ 1925, Presses Universitaires de Grenoble, Grenoble
BOURDEAU Ph., DECAMP E., MAJASTRE J.-O., VIZIOZ O. (1992). Le Mont-Aiguille et son double. Presses Universitaires de Grenoble, Grenoble, 130 p.
BOURDEAU Ph. (2002), Temporalités et territorialités de pratiques de l'alpinisme, deux siĕcles de premiĕres ascensions dans le massif des Ecrins (XIXčme et XXčme siĕcles) in Hoibian O., Defrance J. (2002), Deux siĕcles d'alpinismes européens, L'Harmattan, Paris.
BOURDEAU Ph. (2002). Approche géo-historique de l'alpinisme pendant l'Occupation : le cas du massif des Ecrins (1940–1944). In Le sport et les français pendant l'Occupation (P. Arnaud et Al.), éd. l'Harmattan, Paris, pp. 325–334.
LEJEUNE D. (1986), « La conquęte du mont Blanc », L'Histoire, nº88, avril, p. 8–17
LESTAS (1988) P., Les pionniers des Alpes du Dauphiné, Paris , Arthaud, 197 p.
ZUANON J. P. (2001), « Le CAF et la vallée de Chamonix, 125 ans d'Histoire », in Mestre M. Tailland M. (ss la dir.), Hommes et montagnes, revue Babel, nº 5, faculté de Lettres, Toulouse, pp. 161–174.

I – 2 – 5 Mountaineering and gender

AMIC C. (2001), «George Sand et la montagne», in Hommes et Montagnes, Revue Babel nº5, Université de Toulon et du Var, pp. 221–233.
MESTRE M. (2001), « Une exemple de modernité féminine : Elisabeth d'Autriche (Sissi) et la pratique de la montagne », in Mestre M. Tailland M. (ss la dir.), Hommes et montagnes, revue Babel, nº 5, faculté de Lettres, Toulouse, pp. 127–160.
OTTOGALLI-MAZZACAVALLO (2003), C, « Des sportives ŕ part : entre transgression et concession ; L'image des femmes alpinistes parisiennes avant la seconde guerre mondiale », in Haver, G. & Guido, L., L'image des sportives aux 19 et 20čme siĕcles, Genčve, Georg, pp. 167–186.
OTTOGALLI-MAZZACAVALLO C. (2004), « L'alpinisme féminin au sein du Club Alpin Français de 1874 ŕ la fin du 19čme siĕcle », in JM., Delaplace, & S. Villaret, & W. Chameyrat, (Eds.). Sport et Nature dans l'histoire, Sankt Augustin, Académia Verlag, pp. 371–380.
OTTOGALLI-MAZZACAVALLO C., « L'alpinisme : outil d'éducation pour jeunes filles ? », in Gori G. & Terret T. Sport and Education in History, Sankt Augustin, Academia Verlag, pp. .
OTTOGALLI-MAZZACAVALLO C. (2004), « Le rôle du Club Alpin Français

pour l'éducation physique des jeunes filles », in Lebecq, P.-A. (Ed.), Sports, Education Physique et mouvements affinitaires, Paris L'Harmattan, pp. 127–138.
OTTOGALLI-MAZZACAVALLO, C. & SAINT-MARTIN J. (2004), « L'alpinisme féminin avant 1914 : l'exemple d'une singularité ŕ la Française », in The Annual of CESH, pp. 101–116.
OTTOGALLI-MAZZACAVALLO C., (2004). « Les femmes alpinistes au Club Alpin Français ŕ l'aube du 20čme sičcle : une rencontre atypique », Revue STAPS, numéro spécial Sport et Genre, pp. 20–41.
OTTOGALLI-MAZZACAVALLO, C. (2004), « Quand le Club Alpin Français parle au féminin (1874–1919) », in Revue BABEL Langages, imaginaires, civilisations nº10, Université de Toulon Var, 2004, pp. 227–250
OTTOGALLI-MAZZACAVALLO C. (2005), Femmes et Alpinisme (1874–1919): Un genre de compromis, Paris, L'Harmattan, Coll. Espaces et Temps du sport, ŕ paraître 2005.
OTTOGALLI-MAZZACAVALLO C. (2005), « Techniques d'alpinisme et différence des sexes au tournant du 20čme sičcle en France », in Léziart, Y. & Robčne, L., L'homme en mouvement. Histoire et anthropologie des techniques sportives, Ed. Chiron, ŕ paraître.
OTTOGALLI-MAZZACAVALLO, C. (2006), « Des femmes ŕ la conquęte des sommets : genre et alpinisme (1874–1919) », in Revue CLIO, Histoire, Femmes et Société, nº26, ŕ paraître en 2006.
OTTOGALLI-MAZZACAVALLO C. (2006), « Les femmes alpinistes (1838–1914) au service du féminisme ! », in Liotard, P., Terret, T. (Eds.), Genre et Sport. Excellence féminine et masculinité hégémonique, Vol 2, Paris, L'Harmattan, ŕ paraître en 2006.
PAIMBOEUF F. (1986), «Les femmes alpinistes anglo-saxonnes ŕ l'époque victorienne (1838–1914)», Thčse de 3čme cycle , Université Paris VII, 361p.
PAIMBOEUF F. (2000), «Les femmes alpinistes : itinéraires et statut au sein du microcosme alpin (1870–1910)», in Revue Française de civilisation Britannique, Vol. 10, nº4.
PAIMBOEUF F. (2001), « Lucy Walker (1835–1916) : femmes alpiniste, femme victorienne », in Mestre M. Tailland M. (ss la dir.), Hommes et montagnes, revue Babel, nº 5, faculté de Lettres, Toulouse, pp. 115–126.
PIOLLE X. (1987), « Pratiques et représentation des femmes alpinistes », in Sport et changement social, Actes des 1º journées d'étude, MSHA, Bordeaux, pp. 307–316.
REVERZY C. (2003), Femmes d'aventure. Du ręve ŕ la réalisation de soi, Paris, Odile Jacob (Poches), 376p.
TAILLAND M. (2002), «Le Ladies' Alpine Club (1907), Club Alpin féminin ou féministe ?», in Lebecq, (Eds.)., Sports, éducation physique et mouvements affinitaires au 20čme sičcle, Paris, L'Harmattan, pp. 209–218.

WILLIAMS C. (1979), Dames alpinistes, Paris, Arthaud, trad. de l'anglais par Germain F. et J., 259 p.

I – 3 Sociology, anthropology and comparable

I – 3 – 1 Sociological and anthropological approaches of sports cultures

BOURDEAU Ph. (2005), Sports de montagne et territoire dans les Alpes, Revue de Géographie Alpine / Journal of alpine research, T. 92, nº4, Grenoble, RGA, 103 p.
BOUTROY É., 2004, L'ailleurs et l'altitude. Alpinisme lointain et quęte de la différence : une ethnologie de l'himalayisme, Aix en Provence, Thčse d'Anthropologie
LEFEVRE B. (2002), Par monts et par vaux, Contribution ŕ l'analyse sociologique de l'alpinisme ŕ travers la théorie de l,espace des sports, exemple du massif du Mont-Blanc, Thčse de doctorat STAPS, Université d'Orsay, Paris.
LEFČVRE B. (2004), « Contribution ŕ l'étude de la structuration sociale des pratiques de haute montagne : l'exemple des usagers du Mont-Blanc », in La revue de géographie alpine, déc. 2004, tome 92 nº 4, pp. 67–86.
LOUVEL L., ROTILLON G. (1985), L'Alpinisme, Laisse béton, Ed. Scarabée, Paris.
MAJASTRE J. O., «D'une fatalité ŕ l'autre», art. pp. 155–175, doc. d'ethnographie régionale nº 8, Grenoble
RAVENEAU G., 1997, « Radiographie d'une expédition d'entreprise Bull en Himalaya », Ethnologie Française, XXIV, 4, p. 777–78
SEIGNEUR V., Socio-anthropologie de la Haute montagne. Biographie des haut-lieux. Coll. Sociologies et environnement. Direc. S. Juan. Ed. L'Harmattan, en cours.

I – 3 – 2 Socialisation

CORNELOUP J. (2002), " Comment devient-on alpiniste ", in Deux sičcles d'alpinisme européens, ss la direction de J. Defrance et O. Hoibian, L'Harmattan, Paris,pp. 219–247.
CORNELOUP J. (2002), " Processus d'ancrage ŕ l'alpinisme ", Actes du colloque ARIS, CDROM.
CORNELOUP J. (2004), Sociologie de l'action et processus d'ancrage ŕ la pratique de l'alpinisme chez les aventuriers de la montagne, in Loisirs et sociétés, vol. nº 27, nº 1, pp. 251-284.

I – 3 – 3 Symbolical dimensions of mountaineering

BOURDEAU Ph. (1999). L'alpinisme, ou le jeu de la ręverie et du mensonge. In Du canular dans l'art et la littérature, sous la direction de J.-O. Majastre et A. Pessin, Ed. l'Harmattan, collection logiques sociales, pp. 61–73.

BOURGES P. ET MIZRAHI R. (1979), Vision de la nature chez les pratiquants de loisirs de montagne, rapport de recherche C. O. R. D. E. S. nº30/75.
BOZONNET J.P. (1979). «La Montagne initiatique», Espaces et imaginaire, Pug, Grenoble, BOZONNET J. P. (1992), Des monts et des mythes, Collection Montagnes, PUG, Grenoble. p. 47-68.
JOUTARD PH.., MAJASTRE J.O., (dir.) (1987), Imaginaires de la haute montagne, Centre Alpin et Rhodanien d'Ethnologie, diffusion Glénat, Grenoble, pp. 97–108.
JOUTY S. (1987), « L'alpinisme classique, une métaphore en action », in Imaginaire de la haute montagne, Centre Alpin et Rhodanien d'Ethnologie, Diffusion Glénat, p. 167–171
MIZRAHI R., «Genčse des représentations urbaines de l'espace urbain», rapport Cordes nº 30/1975,
MESTRE M. et TAILLAND M. (eds.), 2003, Babel, nº8, « Le voyage initiatique en montagne », 215p.
MESTRE M. (2003), « L'initiation supręme ŕ la montagne : le thčme de la mort dans les récits d'alpinistes germanophobes », in Mestre M. Tailland M. (ss la dir.), Le voyage initiatique en montagne, revue Babel, nº 5, faculté de Lettres, Toulouse, pp. 111–132.
TAILLAND M. (2003), « Une demi-sičcle d'ascensions britanniques au mont-Blanc, mise en récit d'un voyage initiatique entre sciences et aventure 1800–1850 », in Mestre M. Tailland M. (ss la dir.), Le voyage initiatique en montagne, revue Babel, nº 5, faculté de Lettres, Toulouse, pp. 37–56.
VENAYRE S. (2002), « L'alpinisme, une aventure ? Remarques sur l'historicité de l'aventure », in Hoibian O., Defrance J. (2002), Deux sičcles d'alpinismes européens, L'Harmattan, Paris, pp. 163–175.
YONNET P. (2003), La montagne et la mort, Paris, Éditions de Fallois, 222p.
ZUANON J. P. (2003), « La premičre ascension italienne au mont Viso (Piémont 1863), du voyage initiatique au symbole identitaire », in Mestre M. Tailland M. (ss la dir.), Le voyage initiatique en montagne, revue Babel, nº 5, faculté de Lettres, Toulouse, pp. 71–86.

I – 4 Institutional and political approaches

HOIBIAN O. (2003), L'Europe des clubs, Des sports et des jeux, Revue L'Alpe, nº19, Glénat presse, pages 10–16.
MESTRE M., 1998, La montagne et l'alpinisme vecteurs de l'idéologie nationaliste dans les Etats alpins aux 19čme et 20čme sičcles (1850–1950), Thčse sous la direction de J. Grandjonc, 2 volumes, 440p.
RAUCH A. (1986). « Naissance du Club Alpin Français : la convivialité, la nature et l'État (1874–1880) «, in La naissance du mouvement sportif associatif en France, PUL, pp. 275–285.

NADAL E. (2002), « Alpinisme et transgression : les ambiguďtés du mouvement alpin dans la pologne populaire », in Hoibian O., Defrance J. (2002), Deux siĕcles d'alpinismes européens, L'Harmattan, Paris, pp 63–82.
MESTRE M. (1998), La montagne et l'alpinisme vecteurs de l'idéologie nationaliste dans les Etats alpins aux XIXº et XXº siĕcles (1850–1950). Université Aix-En –Provence
RASPAUD M. (1991). « Le refuge, un concentré d'enjeux ». In Les refuges. Actes du colloque de "Fontaine en Montagne" 1990. Fontaine : Ville de Fontaine, Centre Culturel, 1991, pp. 64–66.
TAILLAND M. (2002), « L'Alpine club, émergence d'un modĕle institutionel », in Hoibian O., Defrance J. (2002), Deux siĕcles d'alpinismes européens, L'Harmattan, Paris, pp. 9–22.

I – 5 Development-marketing-management

BOURDEAU Ph. (dir.) (1998). Les via ferrata en France, guide de savoir faire. Les cahiers de l'AFIT, Agence Française de l'Ingénierie Touristique, Ed. AFIT, Paris, 152 p.
CHAUVET R. (1991), « L'escalade comme facteur de développement d'une commune rurale de montagne », in Actes du colloque « Escalade 89 », éd. Actio, Joinville-le-Pont, pp. 118–120
GUERIN J. P. (1990), Dynamiques des pratiques sportives et productions d'espaces : l'exemple du ski et de l'alpinisme, in Géopolitique du sport, Actes du colloque, Besançon, pages 27 ŕ 32.
RENOUX Y. (1991), « Quelle contribution des usagers au financement des sites grimpables », in Actes du colloque Escalade 89, ENSA Chamonix, éd. Actio, Joinville le Pont, pp. 89–95.

I – 6 Linguistics

TETET C. (1985), Les sports de montagne. L'alpinisme I (1757–1975), Matériaux pour l'histoire du vocabulaire français, Datations et documents lexicographiques, Deuxičme série, nº27, CNRS, Klincksieck, Paris.
TETET C. (1991), « Approche lexicologique et lexicographique dans une perspective historique et multilingue du vocabulaire du grimpeur », in Actes du colloque ESCALADE, ENSA Chamonix 89, éd. Actio, Joinville le Pont, pp. 30–34.
TETET C. (1994), « La terminologie de l'alpinisme dans les dictionnaires », Meta, XXXIX, 4, p. 651–661
TETET C. (2004), « La langue des topoguides », in La revue de géographie alpine, tome 92 nº 4, pp. 87–94

I – 7 Multidisciplinary approaches

I – 7 – 1 Media and communication

BALLERI M. (1973), Le roman de montagne en France, Arthaud, Paris.
BELLEFON R. de (2000), « Des autochtones pris dans les filets de guides-livres: les guides de montagne », in Les guides imprimés du XVIº au XXº siĕcle. Villes, paysages, voyages, Belin, pp. 259–270.
BOURDEAU Ph., VALLOT G. (2003), Fils de pub, Des sports et des jeux, Revue L'Alpe, nº19, Glénat presse, pp. 64–71.
BOURDEAU Ph. (2005). Les représentations de la nature dans le discours publicitaire sur le matériel et les vętements de sports de montagne (1982–2002). A la recherche d'indicateurs géoculturels du rapport ŕ l'Ailleurs dans les sociétés urbaines contemporaines, Loisir et société/ Leisure and society, Montréal, vol. 28 nº1, pp. 31–48.
BROSSE S. (2001), «Entre terre et ciel, des aspects de la littérature alpine», in Hommes et montagnes, Revue Babel nº5, Université de Toulon et du Var, pp. 197–220.
BRUANT G. (2002), « Les représentations de l'effort dans les récits d'alpinisme depuis 1950 », in HOIBIAN O., DEFRANCE J. (2002), Deux siĕcles d'alpinismes européens, L'Harmattan, Paris, pp. 119–135.
CHANSON M. (1987), Le roman de la montagne, Ed. Bartillat.
ENGEL CLAIRE Eliane (1930), La littérature alpestre en France et en Angleterre aux XVIIIe et XIXe siĕcles, Librairie Dardel, Chambéry.
HAVER G. (2002), « La montagne, dans le cinéma Suisse (1922–1945) », in Hoibian O., Defrance J. (2002), Deux siĕcles d'alpinismes européens, L'Harmattan, Paris, pp. 147–162.
LEPROCHON P. (1944), Le cinéma et la Montagne, Ed. J. Susse, Paris.
MAO P., VALLOT G., DUHAUT D. (1999), Emergence de l'information topographique ŕ destination des grimpeurs sur Internet : fantasmes et réalités. Un essai d'état des lieux, Dossier de la Revue de Géographie Alpine, nº20, Grenoble, pages 109 ŕ 113.
MESTRE M. et TAILLAND M. (eds.), 2004, Babel, nº10, « Une montagne de journaux », 330p.
PERRET J. (1997), Guide des livres sur la montagne et l'alpinisme, Ed. de Belledonne, 2 Tomes, Grenoble.
RASPAUD M. (2000). « L'alpinisme ŕ la télévision : l'exemple de l'émission Montagne ». In P. Gabaston & B. Leconte (dir.), Sports et télévision. Regards croisés. Paris, Montréal : L'Harmattan, collection "Communication et Civilisation", 2000, pp. 369–386.
RASPAUD M. (1998). « La mise en spectacle de l'alpinisme », Communications. Nº 67, octobre 1998, pp. 165–178.

STEPHAN B. (2000), La presse spécialisée montagne, Discours et environnement, Mémoire de recherche en sciences de l'information et de la communication, U.F.R. Sciences Humaines et Arts, Université de Metz.
TAILLAND M. (2003), «Les mises en récit d'un demi–siĕcle d'ascensions anglo-saxonnes au Mont Blanc, voyage initiatique entre science et aventure», in Revue Babel nº8, Université de Toulon et du Var, pp. 37–56.
VALLOT G. (2004), « Essai sur la notion de voie dans l'histoire, les récits et les topoguides d'alpinisme », in La revue de géographie alpine, tome 92 nº 4, pp. 77–86.
VIGIER C. (2004), « Le topoguide », in La revue de géographie alpine, tome 92 nº 4, pp. 25–30.

I – 7 – 2 Rescue, risks

BALLU (Yves) et al. Médecines et secours en montagne. Grenoble, Musée grenoblois des sciences médicales, 1998. 106 p.
BOURDEAU Ph. (1997). «Le statut ambigu du risque dans les sports de montagne», Actes du colloque du Salon d'Aménagement de la montagne de Grenoble 1996, p. 53–54.
CAILLE (Frédéric). Le droit comme mode de régulation des risques collectifs ? Une approche de l'action des magistrats en matičre de sécurité des activités sportives de pleine nature en montagne. Communication présentée au congrčs de l'Association française de science politique (Rennes, 28 sept. au 1er oct. 1999), 21 p.GLENAT (René).
CORNELOUP J. (1999), «Les services de la sécurité en montagne : un management anthropologique», 2º congrčs de la société française de management, ss la direction de C. Pigeassou, Montpellier, déc. 1998. Actes du colloque, pp. 156–169.
GRAND (Jean-Louis) et SARRAZ-BOURNET (Pierre). Droit de l'alpinisme et sauvetage. Grenoble, PUG, 1988.
HOIBIAN O. (2002), « Accidents de montagne et médiatisation », in Hoibian O., Defrance J. (2002), Deux siĕcles d'alpinismes européens, L'Harmattan, Paris, pp. 311–332.
LESELEUC de E., Raufast Lionel (2004), Du risque en sports de nature : une approche socio-psychanalytique, In Revue Européenne de Management du Sport, nº 12, décembre 2004, 237–258
PINGUET A. (1999), « Topoguide : de la sécurité du pratiquant ŕ la responsabilité des auteurs et des éditeurs. Fiction ou réalité ? », in Espaces – Modes d'emploi, communiquer l'espace dans les sports de montagne, Dossier de la revue de géographie alpine, ss la direction de G. Vallot, nº 20, pp. 59–66
SEIGNEUR V., « Risk and High Mountain : Objective and subjective assessment ». Mountain Research and Development. Berne, ŕ paraître.

SEIGNEUR V., « The problems of defining the risk : The case of mountaineering ». In Learning about risk. Publication des actes du Colloque international « Learning about risk » édition trilingue anglais, espagnol, allemand. ESRC. Canterbury, ŕ paraître.
SEIGNEUR V., « Le risque en haute montagne : jugement de fait, jugement de valeur ». Revue de Géographie Alpine. Grenoble, ŕ paraître.
SEIGNEUR V. (2005), « Alpinisme : de la pratique ŕ risque au style de vie ». In Conditions et genres de vie. Ed. L'Harmattan. Direction D. Legall. Paris.
SEIGNEUR V. (2005), « Risque, montagne et science », Bulletin du SNGM – Section recherche – Numéro 62, Chambéry.
SEIGNEUR V. (2005), « Risque et sciences humaines : point sur la recherche non francophone actuelle ». Working paper. Laboratoire du GRIS.
ZUANON J. P. (2002), « Un sičcle de secours en montagne », Hoibian O., Defrance J. (2002), Deux sičcles d'alpinismes européens, L'Harmattan, Paris, pp. 333–350.
ZUANON J. P. (2002), « Un sičcle de secours en montagne », Hoibian O., Defrance J. (2002), Deux sičcles d'alpinismes européens, L'Harmattan, Paris, pp. 333–350.

I – 7 – 3 History and sociology of mountain guides

Aguetant J., Keller P., Lugrin G., Szekely M. (1974). Le métier de guide, ENSA, Chamonix, 25 p.
BELLEFON Renaud de (1997), Du terroir au territoire : histoire des guides de montagne en France (vers 1780–1960), thčse, Université de Toulouse-Mirail.
BELLEFON R. DE (2002), Histoire des guides de montagne, Alpes et Pyrénées, Particuličre, Cairn, Pau.
BELLEFON R. De (2001), « Paroles de guides... Identités de montagnards et d'alpinistes », in Mestre M. Tailland M. (ss la dir.), Hommes et montagnes, revue Babel, nº 5, faculté de Lettres, Toulouse, pp. 81–102.
BELLEFON R. de (2002), « La montagne décordée : une histoire des guides... de montagne », in HOIBIAN O., DEFRANCE J. (2002), Deux sičcles d'alpinismes européens, L'Harmattan, Paris, pp. 43–62.
BOURDEAU Ph. (1987). "Guides : une étude pour la profession". Ski et Alpinisme, revue annuelle de l'École Nationale de Ski et d'Alpinisme, p. 18–21.
BOURDEAU Ph. (1987). «Contribution ŕ la connaissance de l'activité de guide de haute montagne en France», in «Le métier de guide de montagne», rapport de recherche remis au Commissariat Général au Plan, APRIAM/SNGM.
BOURDEAU Ph. (1987). "Les guides de haute montagne et la pluriactivité". Actes du colloque Journées politique de la montagne, CEMAGREF, Grenoble, p. 225–234.
BOURDEAU Ph. (1988). Un territoire et des hommes : les guides de haute montagne. Dossiers de la Revue de Géographie Alpine nº 2, Institut de Géographie Alpine, Université Joseph Fourier–Grenoble 1, Grenoble, 74 p.

BOURDEAU Ph. (1990), Politique d'encadrement sportif et partition de l'espace : le cas des métiers de la montagne in Géopolitique du sport, Actes du colloque de Besançon 23–24 mars 1990, Université de Franche –Comté, Besançon, pages 313– 324.
BOURDEAU Ph., SALTRE F. (1991). Les besoins de formation des professionnels de la montagne, guides de haute montagne et moniteurs de ski. Rapport remis ŕ Monsieur le Préfet de la Savoie, APRIAM, Chamonix, 1991, 224 p.
BOURDEAU Ph. (1991). Territoire et identité ; recherches sur la territorialité d'un groupe professionnel, les guides de haute montagne en France. Revue de Géographie Alpine, collection Ascendances nº1, Ed. RGA, Grenoble, 285 p.
BOURDEAU Ph. (1991), Guides de haute montagne, Territoire et identité, Recherches sur la territorialité d'un groupe professionnel, Collection Ascendances, Nº hors–série, Revue de Géographie Alpine, Grenoble.
BOURDEAU Ph. (1991). Territoire, culture et identité. Recherches sur la territorialité d'un groupe professionnel : les guides de haute montagne en France. Revue de Géographie Alpine, collection "ascendances", Grenoble, 288 p.
BOURDEAU Ph.– (1995). "Guides de haute montagne : mise scčne territoriale en trois actes". Relief, Chamonix, p. 26–27.
BOZONNET J.P. (1977). Radiographie de la profession de guide de montagne, Etude pour le Syndicat National des Guides, 86 p.
CAILLE F. (2002), « Le guide comme professionnel de l'alpinisme : perceptions et enjeux du traitement judiciaire de la responsabilité dans le domaine des sports de montagne », in Hoibian O., Defrance J. (2002), Deux sičcles d'alpinismes européens, L'Harmattan, Paris, pp. 385–396.
CHAUBET D. (1994), Histoire de la compagnie des guides de Chamonix, La Fontaine de Siloé.
Fabre J. (1980). Statut de guide de montagne, Etude juridique et critique, Thčse de doctorat d'Etat, Université Aix–Marseille 3, 245 p.
LESELEUC de E. (1999). Les guides de haute montagne. Des ambassadeurs de l'imaginaire urbain. Cahiers de l'imaginaire. Arts de vivre, 18, 151–157.
HOIBIAN O. (1993), « « Armand Charlet, un médiateur culturel dans l'univers des guides de haute montagne des années 1930–1940 », in Nouvelles pratiques sportives et collectivités locales, Dossiers de la revue de géographie alpine nº10, pp.137–142.
LOUX F. (1988). Guides de haute montagne ; mémoire et passions. Ed. Didier Richard, Grenoble, 224 p.
LOUX F. (1988b), « Le regard des premiers guides de Chamonix sur la haute montagne », Le Monde alpin et rhodanien, 1er–2čme trimestre, p. 187–195
MAJASTRE J.-O., DECAMP E. (1988).Guides de haute montagne. Ed. Glénat, Grenoble, 189 p.

MAJASTRE J. O. (1991), « Le guide de haute-montagne et son corps », Corps, religion, société, CREA, Lyon, PUL, pp. 108–114.
MIDOL N. (1984), « L'acculturation des guides de haute montagne sous la pression du nouveau dispositif juridictionnel de la politique préventive », in Sports et sociétés contemporaines, VIIIº symposium de l'ICSS, Paris INSEP 1983, pp. 549–554.
PINGUET A. (2002), « Encore plus d'Europe pour les guides », in Hoibian O., Defrance J. (2002), Deux siĉcles d'alpinismes européens, L'Harmattan, Paris, pp. 385–396.
ROUSSET P.-L., DE LEYMARIE J. (1995). Mémoires d'en haut ; histoire des guides de montagne des Alpes françaises. Ed. Didier Richard, Grenoble, 363 p.
SEIGNEUR V. (2001), Monographie des jeunes diplômés moniteurs de ski et guides de haute montagne, Ministĉre de la Jeunesse et des Sports et de l'ENSA, 57p.
SEIGNEUR V. (2000), Monographie des aspirants guides de haute montagne en 1999, Ministĉre de la Jeunesse et des Sports et de l'ENSA, 38p.

I – 7 – 4 Mountaineering in the Himalayas

BOUTROY É. (2005a), « Voyageurs d'en haut. Usages et représentations de l'altitude dans l'alpinisme en Himalaya », in Société de Sociologie du Sport, Dispositions et pratiques sportives, Paris, L'Harmattan (Sports en société)
BOUTROY É. (2005b), « D'un sauvage, l'autre. Les figures de l'altérité dans les récits d'expéditions en Himalaya », in O. Hambursin (éd.), Récits du dernier siĉcle des voyages. De Victor Segalen ŕ Nicolas Bouvier, Paris, Presses Universitaires de Paris Sorbonne, p. 31–43
BOUTROY É. (s. presse), « Dompteurs d'altitude. Techniques d'acclimatation dans l'alpinisme himalayen », in Y. Léziart (éd.), L'homme en mouvement. Techniques sportives et culture, Chiron.
MURILLO X., 1991, « L'himalayisme » in M. Percot (éd.), Himalayas, Paris, Autrement, nº28, p. 33–37
PLAGNOL G. & RASPAUD M. (2004). « Le tourisme sportif dans les Himalayas. Naissance, structuration et sens du voyage occidental vers les plus hautes montagnes du monde ». In C. Sobry (dir.), Le tourisme sportif. Villeneuve d'Ascq : Presses Universitaires du Septentrion, collection "Sport et sciences sociales", 2004, pp. 73–102.
RASPAUD M. (1991). « Fatigue, maladie et mort dans le récit himalayen francophone des années cinquante ». In N. Midol (dir.), Performance et santé. Nice : LANTAPS / Paris : AFRAPS, 1991, pp. 103–108.
RASPAUD M. (1994). « Himalayisme, nationalismes et géopolitique. De la fin du XIXe siĉcle aux années soixante ». In P. Arnaud & A. Wahl (dir.), Sports et relations

internationales. Metz : Centre de Recherche Histoire et Civilisation de l'Europe Occidentale de l'Université de Metz, nº 19, 1994, pp. 261–280.
RASPAUD M. (1996). « Storia politica dell'himalajismo », Ricerche Storiche. Anno XXVI, nº 3, settembre-dicembre 1996, pp. 605–618.
RASPAUD M. (1997). « Himalayisme et nationalismes entre les deux guerres. Concurrences et coopération ». In A. Krüger & A. Teja (a cura di), La Comune Ereditŕ dello Sport in Europa. Rome (Italie) : Scuola dello Sport - CONI, 1997, pp. 375–378.
RASPAUD M. (1997). « Ecology and symbolics of legitimation in mountaineering in the Alps and the Himalayas ». In P. de Nardis, A. Mussino & N. Porro (Eds.), Sport : Social problems, social movements. Rome : SEAM, 1997, pp. 137–142.
RASPAUD M. (1997). « Ecological Issues in Mountain Areas – The Case of the Alps and the Himalayas ». In J. Mester (Ed.), Images of Sport in the World. Conference Proceedings of the 75th Anniversary of the German Sport University Cologne (November 1–5, 1995). Cologne : Deutsche Sporthoschchule Köln, 1997, pp. 476–479.
RASPAUD M. (1997). « Conquęte des sommets et enjeux symboliques. Une histoire de l'himalayisme 1883–1996 ». In E. Perrin (dir.), Sociologie du sport. Genčve : Editions Médecine & Hygične / Georg, 1997 pp. 81–102 [Etudes et Recherches du GISS, Université de Genčve, nº 5 / 1996].
RASPAUD M. (1997). « Expéditions himalayennes et identités nationales ». In P. Chifflet (dir.), Identités, stratégies, sport. Grenoble : Collection Grenoble Sciences, Université Joseph Fourier, 1997, pp. 5–25.
RASPAUD M. (2000). « La vision des vainqueurs. Himalayisme et choc des cultures », La Création Sociale. Sociétés – Cultures – Imaginaires. Nº 5, 2000, pp. 127–146.
RASPAUD M. (2001). « La conception française de l'himalayisme », Stadion. Internationale Zeitschrift für Geschichte des Sports. XXVII, 2001, pp. 213–221.
RASPAUD M. (2001). « Ethique de l'assistance et haute altitude en Himalaya », Babel. Revue de Littérature Française, Générale et Comparée. Nº 5, janvier 2001, pp. 175–193.
RASPAUD M. (2002). « L'absence d'himalayisme sportif Italien durant l'entre-deux-guerres : une énigme ? » In O. Hoibian & J. Defrance (dir.), Deux sičcles d'alpinismes européens. Origines et mutations des activités de grimpe. Paris, Budapest, Turin : L'Harmattan, collection "Sports en Société", 2002, pp. 83–94.
RASPAUD M. (2002). « Himalayisme et usage de la technologie ». In M. Baddeley (dir.), Sports extręmes. Sportifs de l'extręme. La quęte des limites. Genčve : Georg Editeurs, 2002, pp. 93–101.
RASPAUD M. (2002). « Risque en situation extręme et environnement social : Everest 1996 ». In M. Raspaud (dir.), Le management du Sport et l'Europe : Les acteurs, entre concurrence et coopération, Actes du 3čme congrčs de la Société

Française de Management du Sport (Lille, 9–11 décembre 1999). Montpellier : SFMS, 2002, pp. 87–99.
RASPAUD M. (2003), « L'absence de l'himalayisme sportif italien dans l'entre deux guerres : une énigme », in Hoibian O., Defrance J. (2002), Deux sičcles d'alpinismes européens, L'Harmattan, Paris, pp. 83–94.
RASPAUD M. (2003). « L'Everest et l'himalayisme au XXe sičcle : des ambitions nationales au commerce d'altitude », Gymnasium. Revista de educatie fisica si sport. Nr. 5, Anul IV, Noiembrie 2003, pp. 5–18.
RASPAUD M. (2003). « Gravir l'Everest : un exploit ou un loisir ? », Esprit. Revue internationale. Nº 295, juin 2003, pp. 206–210.
RASPAUD M. (2003). « Le voyage en "oxygčne rare" comme expérience initiatique. L'expérimentation de la haute altitude en Himalaya », Babel. Langages – Imaginaires – Civilisations. Nº 8, mars 2003, pp. 87–110.
RASPAUD M. (2003). L'Aventure himalayenne. Les enjeux des expéditions sur les plus hautes montagnes du monde, 1880–2000. Grenoble : Presses Universitaires de Grenoble, RASPAUD M. (2004). « Les premičres années de The Himalayan Journal (1929–1940). Expéditions et normalisation des rčgles d'organisation », @mnis. Revue de Civilisation contemporaine. http://www.univ-brest.fr/amnis/pages_francais/numero_special.php
RASPAUD M. (2004). « Les débuts de The Himalayan Journal, 1929–1940. Le développement de l'alpinisme en Inde, l'Himalayan Club et la société coloniale », Babel. Langages – Imaginaires – Civilisations. Nº 10, juillet 2004, pp. 9–28.
RASPAUD M. (2004). « L'himalayiste : entre amateurisme et professionnalisme ». In Rencontres autour de Pierre Béghin. Actes du colloque du 6 décembre 2002. Ville de Fontaine (Isčre), s.d. [2004], pp. 86–89.
collection "Sports, Cultures, Sociétés", avril 2003, 216 pages.
RASPAUD M. (sous presse). « Le voyage himalayen des alpinistes français et la rencontre de l'Autre (années 1930–1960) ». In Voyages et Voyageurs. Actes du 130e Congrčs national des sociétés historiques et scientifiques. Paris : Editions du CTHS.
RAVENEAU G., 1997, « Radiographie d'une expédition d'entreprise Bull en Himalaya », Ethnologie Française, XXIV, 4, p. 777–78
RAVENEAU G. (2002), « La premičre ascension de l'Everest : une męme histoire, deux exploits différents », in Hoibian O., Defrance J. (2002), Deux sičcles d'alpinismes européens, L'Harmattan, Paris, pp. 175–188.

II – ROCK CLIMBING

II – 1 Global approach of rock climbing

BOURDEAU P. (1995) (Sous la direction de), L'escalade, entre sport et tourisme, Coll. Loisirs et produits, A.F.I.T., Paris.
BOURDEAU Ph. (1991), « L'escalade en chiffres : approche quantitative du développement de l'escalade en France », in Actes du colloque « Escalade 89 », éd. Actio, Joinville-le-Pont, pp. 83–88.
BOURDEAU Ph., DECAMP E., PINGUET A. (1993). L'escalade entre sport et tourisme. Rapport remis ŕ l'Agence Française d'Ingénierie Touristique (AFIT), Association Pour la Recherche, l'Innovation et l'Adaptation en Montagne, Chamonix, 160 p.
DUPUY C (sous la direction de) (1991). Actes du colloque "Escalade 89", éd. Actio, Joinville-le-Pont.
MARTHA, C. (2005) « Escalader ». Ouvrage collectif (Dir. B. Andrieu), « Le Dictionnaire du corps », Ed CNRS, sous presse.

II – 2 History

DROYER J. C. (1991), « Naissance d'une pratique sportive autonome », in Actes du colloque « Escalade 89 », éd. Actio, Joinville-le-Pont pp. 21–24
DURING B. (1991), « Les vertus du grimper : approche historique », in Actes du colloque « Escalade 89 », éd. Actio, Joinville-le-Pont, pp. 51–54.
TRIBOUT J.-B., CHAMBRE D. (1987). Le 8čme degré ; dix ans d'escalade libre en France. Ed. Denoël, Paris, 185 p.

II – 3 Sociology of the practice

II – 3 – 1 Social and cultural approach

AUBEL O. (1999) La signification sociale des comportements en escalade libre, STAPS, 51, 69–80.
AUBEL O. (2005), L'escalade libre en France, L'Harmattan, Paris.
DECAMP E. (1987). La grimpe et la glisse, le nouveau plaisir de la montagne, Le Point nº 760, p. 149–157.
LAPIERRE A. (1981), Sports de pleine nature et pratiques sociales, Analyse socio-culturelle du canoë-kayak et de l'escalade, mémoire pour le diplôme de l,I.N.S.E.P., Ministčre J & S, Paris.
MAJASTRE J. O. (1991), « L'escalade prétexte », in Actes du colloque « Escalade 89 », éd. Actio, Joinville-le-Pont, pp. 66–68.
BOZONNET JP. (1987), «Les allumés de la grimpe», Imaginaires de la haute montagne, Centre Alpin et Rhodanien d'ethnologie, Grenoble, Glénat, pp. 135–148

POCIELLO C. (1991), « L'escalade dans le champ socio-culturel », in Actes du colloque « Escalade 89 », éd. Actio, Joinville-le-Pont,pp. 10–20

II – 3 – 2 Risks

DE LESELEUC E. (1998), « L'escalade contemporaine : goűt du risque ou passion de la... lecture », in Agora nº 11, L'Harmattan, Paris, pp. 65–72.
MARTHA, C., BONNON, M., GRIFFET (2002), J. « Le risque dans la pratique de l'escalade ». AGORA débats/jeunesse 27, 74–85.
MARTHA, C. « Le corps engagé dans l'escalade » (2005), Ouvrage collectif « Le corps extręme dans les sociétés occidentales » (Dir. O. Sirost), 179–186.
LEFEVRE B. (2000), « Contribution ŕ l'accidentologie des pratiques de haute montagne et de randonnée en moyenne montagne. Département de la Haute-Savoie, année 1998 ». Dossier nº14 du Conseil supérieur des sports de montagne, Chamonix, 53 p. + annexes.
LEFEVRE, B. (2002), Par monts et par vaux ; contribution ŕ l'analyse sociologique de l'alpinisme ŕ travers la théorie de l'espace des sports. L'exemple du massif du Mont-Blanc, Thčse Staps, Paris-Orsay, 900 p..
ZUANON J.-P. (2002). « Un sičcle de secours en montagne », in Hoibian O., Defrance J. (2002), Deux sičcles d'alpinismes européens, L'Harmattan, Paris, pp. 333–350.

II – 3 – 3 Socialisation

MAO P. (2002) (sous la direction de), Les jeunes et l'escalade en Région Rhône-Alpes, Audit sur les pratiques des jeunes dans leurs déclinaisons sportives, ludiques et touristiques, Région Rhône-Alpes, FFME, CAF, TEO-CERMOSEM, Le Pradel - Mirabel.

II – 3 – 4 Institutional approach

Aubel O. (2000) Médiatisation et institutionnalisation d'une pratique sportive «contre-culturelle»: L'escalade libre et sportive, Regards sociologiques, 20, 107–125.
AUBEL O. (2002), « Les enjeux de la sportivisation de l'escalade libre », in Hoibian O., Defrance J. (2002), Deux sičcles d'alpinismes européens, L'Harmattan, Paris, pp. 273–292.
RASPAUD M. (1991), « L'escalade entre loisir et compétition ou les enjeux de la politique fédérale », Actes des 2º assises des APPN, Toulouse, pp. 77–86
RASPAUD M. (1991). « L'escalade entre loisir et compétition, ou les enjeux de la politique fédérale ». In Actes des IIčmes Assises des Activités Physiques de Pleine Nature, Université Paul-Sabatier, 17–19 octobre 1991. Toulouse : Laboratoire de Recherche en APS, UFR-STAPS, Université Paul Sabatier - Toulouse III, pp. 77–86.

Gloria A. & Raspaud M. (sous presse). « Emergence des compétitions d'escalade en France (1980–1987). Genčse d'une offre fédérale », STAPS. Revue internationale des sciences du sport et de l'éducation physique.

II – 4 Sociology of the spaces of practice

II – 4 – 1 Sociology of urban climbing

BOURDEAU Ph., PINGUET A. (1990). Gérer l'escalade en milieu urbain. Conseil Supérieur des Sports de Montagne/Institut de Géographie Alpine, Chamonix/Grenoble, 15 p.
Camy J. (1991), Les formes urbaines de l'escalade dans l'agglomération lyonnaise, in Actes du colloque « Escalade 89 », éd. Actio, Joinville-le-Pont, pp. 35–39.
Defrance J. et Hoibian O. (1991), « Des conditions culturelles de la diffusion des pratiques d'escalade sur structures artificielles : comparaison entre l'Angleterre et la France (années 1960–1980), in Actes du colloque « Escalade 89 », éd. Actio, Joinville-le-Pont, pp. 25–29.
LACROIX G. (2002), Des structures artificielles aux salles dédiées ŕ l'escalade in Les espaces sportifs innovants, tome 2, Nouvelles pratiques, nouveaux territoires, L'innovation dans les espaces marchands et mixtes, Presses Universitaires du Sport, Voiron, pages 1 ŕ 38.
Midol N., Roggero C. (1991), « La danse-escalade aux confins du sport et de l'art », in in Actes du colloque ESCALADE, ENSA Chamonix 89, éd. Actio, Joinville le Pont, pp. 55–59.
ROTILLON G. et al, (1993) « L'escalade dans les cités : ŕ quelles conditions », in Nouvelles pratiques sportives et collectivités locales, Dossiers de la revue de géographie alpine nº10, pp. 69–77.

II – 4 – 2 Sociology of outdoor spots of practice

AUBEL O., « Les effets locaux de la marchandisation du spectacle sportif : l'exemple de l'escalade libre en France », in Loisir et société, nº 27, nº 1, 121–142.
DE LESELEUC E. (2000), « Voler » et donner... Ethnosociologie d'un « lieu anthropologique » : le site d'escalade de Claret », Thčse S.T.A.P.S., Université Montpellier I, Montpellier.
DE LESELEUC E. (2000), Usages de la violence, symbolique et appropriation territoriale dans les pratiques physiques, l'exemple de l'escalade ŕ Claret, Revue « STAPS » – Internationale des Sciences du Sport et de l'Education Physique, AFRAPS, Volume 21, Grenoble, pages 81–91.
DE LESELEUC E., GLEYSE, J., MARCELLINI A. (2002), The practice of sport as political expression ? Rock Climbing at Claret, France, International Sociology, Vol 17(1), 73–90

DE LESELEUC E. (2002), « Territorialisation de l'escalade et appropriation de l'espace : des enjeux sociopolitiques », in Hoibian O., Defrance J. (2002), Deux siĕcles d'alpinismes européens, L'Harmattan, Paris, pp. 259–273.
DE LESELEUC E. (2004), « Escalade et territoire : des procédés symboliques d'appropriation d'un espace public », in La revue de géographie alpine, tome 92 nº 4, pp. 87 –104
DE LESELEUC É., 2004, Les « voleurs » de falaise. Un territoire d'escalade entre espace public et espace privé, Maison des Sciences de l'Homme d'Aquitaine
GARNIER E. (1988), Buoux, centre mondial de l'escalade, UEREPS, Université Aix-Marseille.
VAUCHER B. (2001), Des rochers et des hommes, 120 ans d'escalade dans les Calanques, Editions de l'Envol, Forcalquier.

II – 5 Sociology and expertise of professional practices

BOURDEAU Ph. (1989). "Pratiques sportives et besoins d'encadrement de l'escalade en France". DIRE en APS nº32/33, p. 17–20.
Bourdeau Ph. (1991), « Le marché de l'encadrement professionnel de l'escalade en France », in Actes du colloque « Escalade 89 », éd. Actio, Joinville-le-Pont, pp. 108–112.
BOURDEAU P. (1991), L'escalade en France, Pratiques sportives et débouchés professionnels, les métiers du sport, La documentation française, Paris.
VACHEE C. (2000), Représentation de la nature et comportements d'offre en escalade, Etude ŕ partir de trois catégories d'acteurs : présidents de club, moniteurs brevetés d'Etat et équipeurs de falaise, Thĕse de doctorat STAPS, Université Joseph Fourier, Grenoble.
VACHEE C. (2001), Représentation de la nature et offre sportive : le cas des moniteurs d'escalade, in Les métiers du sport et du tourisme dans les espaces ruraux et montagnards, Montagnes Méditerranéennes, nº13, TEO-CERMOSEM, U.J.F., Le Pradel, Mirabel, pages 99–104.
VACHEE C. (2002), « Représentations de la nature chez des offreurs d'escalade : l'exemple des brevetés d'Etat », in Hoibian O., Defrance J. (2002), Deux siĕcles d'alpinismes européens, L'Harmattan, Paris, pp. 249–258.

II – 6 Geography, management, territorial development

BEAUMONT A. (1993), « Collectivités locales et escalade : le cas de l'Ardĕche », in Nouvelles pratiques sportives et collectivités locales, Dossiers de la revue de géographie alpine nº10, pp. 17–23.
BOCHATON P. Y. (1996), L'escalade ŕ Orpierre dans les Hautes-Alpes, Eléments de réflexion pour une approche économique, rapport d'étude, L'entreprise Verticale, Etoile.

BOURDEAU Ph. (1989). “L’escalade en France : des équipements sportifs ŕ l’espace de pratique”. Mappemonde, n°2/1989, «Espaces du sport», pp. 14–15.
BOURDEAU Ph. (1988). “La pratique de l’escalade”, Produire et commercialiser l’espace touristique, Dossiers de la Revue de Géographie Alpine n°1, p. 35–44.
CHARRIER M. (1991), « L’escalade comme facteur de développement d’une commune urbaine », in Actes du colloque « Escalade 89 », éd. Actio, Joinville-le-Pont, pp. 116–117.
Cordier P., Decamp E. (1983). Etude sur les écoles d’escalade en France. Rapport au secrétariat d’Etat chargé du tourisme, Ecole nationale de ski et d’alpinisme, Chamonix.
DUCARNIN H. (1999), Le développement local et l’escalade ŕ Buoux in Le tourisme facteur de développement local, Coll. Débats, Presses Universitaires de Grenoble, pages 61–70.
MAO P. (1994), La difficile gestion du « foncier récréatif », L’exemple des falaises d’escalade. Université Jean Moulin, Lyon.
MAO P. (2005), « Appropriation d’un haut-lieu de pratiques sportives de nature. Construction d’un espace de jeux – d’un théâtre des corps », in Le corps de l’alpin, ss la direction de Boëtsch G., éd. des Hautes-Alpes, GAP, 2005, pp. 313–332.
MAO P., CORNELOUP J., BOURDEAU P., (2003), Analyse des processus de territorialisation des hauts lieux de pratiques touristiques et sportives de nature : l’exemple des Gorges du Verdon, Revue Téoros, Presses Universitaires du Québec, Sainte-Foy.
TAUPIN D. (1991), « Pour une politique d’aménagement, d’équipement, de maintenance et de protection des sites d’escalade », in Actes du colloque « Escalade 89 », éd. Actio, Joinville-le-Pont, pp. 238–241.

II – 7 Law

Brenot M. C. (1991), « Escalade et droit de la responsabilité », in Actes du colloque « Escalade 89 », éd. Actio, Joinville-le-Pont, pp. 146–149.
La Robertie P. DE, (2002) « La responsabilité des constructeurs de structures artificielles », in Actes du colloque « Escalade 89 », éd. Actio, Joinville-le-Pont, 1991, pp. 149–155.
Pinguet A. (1988), L’escalade et le droit. Conseil supérieur des sports de montagne. ENSA, Chamonix.
PINGUET A. (1988), L’escalade et le droit. 1čre partie : Communes et sites d’escalade, vers une gestion maîtrisée des responsabilités. 2čme partie : Structures artificielles d’escalade, réglementation et responsabilités. Secrétariat général du Conseil supérieur des sports de montagne. Chamonix, CSSM-ENSA.
Servoin F. (1991), « L’environnement juridique de l’escalade », in Actes du colloque « Escalade 89 », éd. Actio, Joinville-le-Pont, pp. 122–137.

II – 8 Ecology
Peltier J. Y. (1991), « L'escalade et l'environnement, les limites ŕ la pratique de l'escalade dans les zones sensibles », in Actes du colloque « Escalade 89 », éd. Actio, Joinville-le-Pont, pp. 138–141.

II – 9 Marketing
Ramanantsoa B. (1991), « L'escalade, support d'image pour la publicité d'entreprise », in Actes du colloque « Escalade 89 », éd. Actio, Joinville-le-Pont, pp. 100–107.

II – 10 Economy
BOURDEAU Ph., ROTILLON G. (1999). L'impact de l'escalade dans le développement touristique du Briançonnais : une analyse coűts-bénéfices. Revue juridique et économique du sport nº51, juin 1999, Ed. Dalloz, Paris, pp. 7–27.
Rotillon G. (1990), « Analyse micro-économique de l'escalade », Dire en APS, nº 34, pp. 7–12.
Rotillon G. (1991), « De quelques problčmes posés par l'évaluation économique du sport : l'exemple de l'escalade », in 4º colloque de Comptabilité nationale, Paris, 1991.
Rotillon G. (1991), « Les enjeux socio-économiques de l'escalade », in Actes du colloque « Escalade 89 », éd. Actio, Joinville-le-Pont, pp. 74–82.

III – MOUNTAINEERING – ROCK CLIMBING

III – 1 Stakes of a comparison
Aubel O., « Alpinisme et escalade : rupture ou continuité », in Hoibian O., Defrance J. (2002), Deux sičcles d'alpinismes européens, L'Harmattan, Paris, pp. 293–310.
Léséleuc de E., RAUFAST L. (2004), Jeux de vertiges : l'escalade et l'alpinisme, In Revue Française de Psychanalyse, 1er trimestre 2004, 233–246.
ROTILLON G. (2002), « Alpinisme et escalade : rupture ou continuité ? », », in Hoibian O., Defrance J. (2002), Deux sičcles d'alpinismes européens, L'Harmattan, Paris, pp.293–310.

III – 2 Sociology
CORNELOUP J. (1991), "Les styles de pratique en escalade... des idéologies en interaction", in Escalade 89, Actio, Dupuis Ed., Joinville, pp. 40–50.
CORNELOUP J. (1991), "Production et consommation de la valeur en escalade", in Actes des IIº assises des activités de pleine nature, UFR STAPS, Toulouse, pp. 85–104.
CORNELOUP J. (1991),"Escalades et post-modernité", in Société, Dunod, nº 34, pp. 385–395.

CORNELOUP J. (1993), “Escalades et société ; contribution ŕ l’analyse du systčme, du communicationnel et du social” – Thčse pour le Doctorat en Sciences (STAPS) de l’Université de Paris Sud-Orsay, 1993, 3 tomes et annexes; 730 p.
CORNELOUP J. (1995), «Le masculin et le féminin en escalade», Les actes du colloque international «Sport, culture et tradition» (comité de lecture), ss la direction de C. Pigeassou, pp. 321–330.
CORNELOUP J. (1995), «Les nouvelles formes de sociabilité en escalade», in les actes du colloque international Sport, relations sociales et action collective, comité de lecture, coordinateurs : J. P. Augustin et J. P. Callčde, Talence, édition de la MSHA, pp.199–210.
CORNELOUP J. (1995), «Média et styles de pratique en escalade», Les actes du colloque international «Sport, culture et tradition» (comité de lecture), ss la direction de C. Pigeassou, pp. 282–295.
CORNELOUP J. (1995), “La problématique du risque en escalade”, in “Espaces et Sociétés” (nº 72), pp. 97–115.
CORNELOUP J. (1995), «Escalades : entre risque et ludisme», article pour l’Encyclopédia Universalis (la vie au quotidien) – 1995, pp.346–350.
CORNELOUP J. (1997), «Risque, opinion publique et escalade», in Société, nº 55, De Boeck, pp. 23–40.
CORNELOUP J. (1998), «Pratiques d’escalade et urbanité», (comité de lecture), in «Le sport dans la ville», ss la direction de C. Vivier et J.F. Loudcher, L’Harmattan, Paris, pp. 247–260.
CORNELOUP J. (1999), « Le Communicationnel, un référentiel d’analyse des pratiques d’escalade durant la modernité» , (comité de lecture), in L’histoire du sport, l’histoire des sportifs, ss la direction de J. M. Delaplace, L’Harmattan, Paris, pp. 351–372.
CORNELOUP J. (1999), «Les imaginaires en escalade», Les Cahiers de l’Imaginaire, nº 18, pp. 28–37
CORNELOUP J. (1999), «Sociologie des topos d’escalade», in Espaces – Modes d’emploi, Dossier de la revue de Géographie Alpine, nº 20, pp. 31–40.
CORNELOUP J. et BOURDEAU Ph. (2002), “Culture professionnelle et métiers du tourisme sportif de montagne ”, revue Téoros. Canada, 2002, vol. 20, nº 3, pp. 32–44.
CORNELOUP J. (2003), « Les cultures sportives de la montagne d’aujourd’hui et de demain », in Les Pyrénées entre deux mondes, PUP, Perpignan, pp.135–162.
Corneloup J. (2005), « D’un corps ŕ l’autre dans les pratiques sportives de la montagne », in Le corps de l’alpin, ss la direction de Boëtsch G., éd. des Hautes-Alpes, GAP, pp. 257–270
Deck C. (1988). L’escalade ŕ travers les âges, La Montagne et Alpinisme nº 2/1988, p. 52–65.

Raspaud M. & Defrance J., sous la direction de (2000). Numéro thématique « Alpinisme et escalade » de la revue STAPS. Revue internationale des sciences du sport et de l'éducation physique. Vol. 21, nº 51, 2000.

IV– Outdoor and mountaineering sports

BOURDEAU Ph., CORNELOUP J., MAO P. (2002). Adventure sports and tourism in the French mountains. Current Issues in Tourism Vol. 5 nº1/2002, pp.22–32, Clevedon.

BOURDEAU Ph., CORNELOUP J., MAO P. Outdoor Sports and Tourism in French Mountains: towards a Sustainable Development?. In Ritchie, B.W. & Adair, D. (eds). Sport Tourism: Interrelationships, Impacts and Issues. Clevedon: Channel View Publications, pp. 101–116.

BOURDEAU Ph., CORNELOUP J., MAO P., BOUTROY E. (2004). Les interactions entre cultures sportives de montagne et territoires : un état des lieux de la recherche française depuis 1990, Cahiers de géographie du Québec nº 133, Montréal, pp. 33–46.

ANNEX 2.

Mountain, nature and adventure sports research network
www.sportsnature.org

The object of this society is to bring together university researchers and experts from a wide range of subjects such as science and techniques of physical education, geography, sociology, biology, ethnology, economy, law and medicine.

Our four main goals are :

1/ To link experts and researchers working on themes related to outdoor activities and mountaineering : covering legal aspects, management and developement of areas devoted to their practice, sports trades, economical and environmental aspects, physiology of effort, events, medicine, risks, sports equipment technology and sports practices.

2/ To create an environment for scientific exchanges and to encourage interdisciplinary objectives such as conferences, reviews, research programmes.

3/ To promote and develop the results of these researches as well as knowledge and skills to interested parties.

4/ To create a link with graduate students involved in the above mentioned subjects.

These goals will be communicated by establishing a website www.sportsnature.org, by publishing a list of members (researchers and experts), by holding seminars and conferences, by publishing books and journals as well as leading research programmes.

We are currently listing all the research centres, laboratories, as well as the researchers and experts, who are leading researches or studies on mountaineering, outdoor activities and adventure sports in all fields of expertise, (Economics, Sociology, Ethnology, Geography, History, Psychology, Tourism, Sports...). If you wish to join the network, please send your personal details (Name, Forename, research centre, address, telephone and fax number, E-mail, Field of research and expertise) to : j.corneloup@libertysurf.fr

PROGRAM OF IMOSC

Thursday 24th November
Until 19:00: Arrival of participants to the Faculty of Physical Education
Transport to Hruba Skala

Friday 25th November
Breakfast

9:00 Official opening of the conference
9:30 **Can OSE save the world?**Wilfried Meulenbergs
10:00 **Climbing in Youth Organisation: Challenges of Sport Clashing with Youth Work,** Ondrej Pohanka

10:30 Coffee break

10:45 **Climbing and mountaineering from the human perspective,**
Jan Neuman
11:15 **A critical overview of French social scientific research on rock climbing and mountaineering,** Jean Corneloup, Ph. Bourdeau, P. Mao
11:45 **Climbing and mountaineering: What difference?** Gilles Rotillon

12:30 Lunch

14:30 **Economic benefits from climbing tourism,** Herbert Woratschek and Frank Hannich
15:00 **Differences in climbing of blind children,** Pavel Vojtík

16:00 Coffee break

16:30 **The influence of climbing on child physical fitness** Jiří Baláš
17:00 **The influence of selected factors on the performance of sport climbers** Ladislav Vomáčko
17:30 **Sport and environment** Silvia Suppaeck

19:00 Dinner and cultural program

Saturday 26th November
9:00 –11:00 Workshops
Ecology in mountaineering and climbing
Children in mountaineering and climbing

11:30 Walk in the Sandstone town

13:00 Lunch

15:00 –18:00 Practical part – climbing wall (Jicin)

Methodology: Climbing games Hilde Tousseyn
Climbing with blind children Pavel Vojtík

19:00 Official closing of the conference

Festive dinner

Sunday 27th November
Departure from the castle

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