EFFECTIVENESS OF SPORTS ACTIVITIES WITH AN ORIENTATION ON EXPERIENTIAL EDUCATION, ADVENTURE-BASED LEARNING AND OUTDOOR-EDUCATION

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Abstract:

The following article deals with the analysis of the effectiveness of sports activities with an emphasis on adventure-based learning, experiential and outdoor education. In spite of the variety of approaches a multifaceted emphasis can still be identified. They are used as (course) modules aiming at developing a modification of behaviour. Insomuch such exertions show explicit signatures of processes of sports education. In view of the difficult manageable size of the supply in this main sector of outdoor education, the question arises, which effects of activities of outdoor education can be expected. To investigate the effectiveness of interventions of outdoor education, sports students were examined during two successive compact camps, consisting of the typical relevant contents of outdoor education. The diagnostic instrument, the *Multidimensional Self-Esteem Scale (MSES)* (Schütz & Sellin, 2006), consisted of different scales concerning *general self-esteem (GSW)* and *self-esteem with reference to the body (BSE)*. The subordinate scales apply to the dimensions of self-worth, self-esteem, interpersonal conduct, social behaviour, awareness of body and movement, etc. Our investigations show a positive effect – the improvement of various facets of self-esteem, as well as the differentiation of the results within the sub-scales (consequently different effects can be distinguished here) for the experimental group. The control group, the group that did not take part in an outdoor activity, did not show such a positive effect.

Key words: *effectiveness, sports activities, experiential education, adventure-based learning, outdoor education, self-esteem*

Introduction

The findings about experiential education[1] are contradictory. This applies to attempts at a theoretical systematization as well as to findings concerning their possible effects. Thus the *Institut für Sportwissenschaft und Motologie* (Institute for Sports Science and Motology) of the University of Magdeburg offers a Master's degree in *Erlebnispädagogik* (Experiental Education) and explicitly promotes identifiable, theoretically based supplies of knowledge for this field (Beard & Wilson, 2002). However, Koring sees exactly in this area a major flaw (Koring, 1997).

Moreover, adventure-based learning generally possesses a tendency to diffuse (Berthold & Ziegenspeck, 2002; Küntzel-Hansen, 1990). Since its traces are so numerous, the question occurs which pedagogical concepts do not bear the marks of experiential education. In his criticism of adventure-based learning Schott (2003) characterizes this phenomenon as follows: 'One gets "… the impression that all educational fields [...] had literally something to do with Experiential Education, as if Adventure-based Learning could be consulted for every type of pedagogical question or rather could be considered apt pedagogical munitions for mas-

[1] According to Michael Rehm Nature, tasks, problems, games and reflections are being combined in outdoor education and used as the media to reach aims of changing behaviour, training, education, personal development and therapy (Rehm, 1996, p. 144).

tering any conflict and problem" (Schott, 2003, p. 247). At the same time, he addresses the problem of overinflated expectations regarding their effectiveness. They also seem to be immensely numerous – influential fragments of experience-based education seem to be found in almost all educational models in the course of history, provided that these models show aspects of experiential learning.

In the same way this assumption is being supported by the *Handbuch Erlebnispädagogik (Handbook of Experiential Education)* by Torsten Fischer and Jörg Ziegenspeck (2000).

In all varieties of adventure-based learning approaches, a multifaceted emphasis can still be identified. Thus the emphasis on primarily sports activities (in Nature) in so-called outdoor activities, attracts attention. They are used as (course) modules aiming at developing a modification of behaviour. Insomuch explicit signatures of processes of sports education are found in such exertions.

In principle the effects of outdoor education activities emphasizing the body can also be expected of indoor activities. Especially nowadays practical scenarios for activities of outdoor education in physical education as well as in sports clubs – in particular for the gymnasium – are being increasingly discussed (Bieligk, 2005, 2006; Fries, 2006; Klein, 2006; Leppa, 2006; Neuber, 2006; Priest, 1999; Probst, 2006; Rhodes, 2000; Rodenbaugh, 2002; Schwier, 2006).

In view of the difficult manageable size of the supply also in this main sector of Outdoor Education the following questions arise:

1. Which effects can be expected of activities of outdoor education?
   On the one hand, outdoor education has rapidly spread. On the other hand, we harbour some doubts about its effects.
2. Yet another question of interest for us was to test the feasibility and utility of diagnostic instruments. In this context the essay addresses the question by which standards do effective outdoor education activities differ from questionable ones, which advertise with a reformatory slogan of an outdoor educational nature and are promoted under the term *outdoor education,* but at the same time are based on shaky training-scientific foundations, problematic in their purpose of physical education and entirely overrated in their expectations?

Research on the effectiveness of physical and outdoor education (Bartel & Rehm, 1996) has remained limited – at least in the German-speaking regions, when compared to the variety of activities. Nevertheless, in relevant literature it is examined quite critically and in detail (Fischer, 1999; Fischer & Ziegenspeck, 1999a, 1999b; Hermann, 1999a, b, c; Sommerfeld, 1998; Wellenreuther, 1999). A core aspect of the criticism is the general reproach that one considers a range of studies in any case as research on demand and that their results take primarily the interests of private educational institutions or the political needs of public authorities into consideration. Another central problem results presumably out of the derivation of research methods from the "personal self-evidence of human experience", which provides empirical researchers with little empirical evidence (Fischer & Ziegenspeck, 1999a)

In particular, one of the greatest effectiveness analysis, an empirical study by Jagenlauf carried out from 1985 to 1989 by order of the Outward Bound Germany, has fallen under criticism even until today and is considered a "failed study" (Hermann, 1999c). Even Jagenlauf´s explanations can hardly refute this critique (Jagenlauf, 1992, p. 72 et seq.).

In the meantime a wide range of studies has been published in which qualitative methods dominate. But also quantitative analysis – for example, the measurement of the development levels of different personality traits through the use of psychometric personality tests in the context of activities of outdoor education – have a certain tradition in the German-speaking regions. Thus in their study about benefits and chances of outdoor training sessions in the context of the testing of practical transfer to a business context Kern and Schmidt (2001) used the *Bochumer Inventory of Profession-centred Description of Personality (BIP)* and the *Team-Klima-Inventar (TKI)*, a psychometrically validated German translation from American English (Kern & Schmidt, 2001, p. 188 et seq.). In summary, they found out that the results support the idea that adventure-based learning is able to promote individual responsibility and to strengthen independence and lend further proof to the possible potential of adventure-based learning to enhance self development and increase self-confidence (Kern & Schmidt, 2001, p. 301).[2]

Methods

We collected data about the effectiveness of outdoor education in an empirical way. The research issues we focused on were to test the feasibility and utility of diagnostic instruments referring to various facets of self-value.

Participants

The participants were 67 sports students (30 females and 37 males) of the TU Chemnitz (Technical University of Chemnitz) in an experimental group

[2] For more detailed descriptions on the use of leadership games or adventure in the workplace see for example Kaagan (1999), Miner (1999), Mazany, Francis, & Sumich (1997).

and 48 participants (18 females and 30 males) in a control group. Their age ranged from 19 to 27 (M: 22.79 yrs; SD: 1.99 yrs).

Procedure

The participants of the experimental group took part in two successive compact camps, each lasting eight days, consisting of the typical relevant contents of outdoor education (orienteering hiking, mountain-biking, kayaking including a journey of several days, and a concluding triathlon). We took the measurements immediately at the beginning and at the end of this practical part of the training programme. The pre-test and post-test measurements were executed using pencil-paper tests.

The participants of the control group (also sport students of both genders) were examined at the University of Magdeburg.

Several advantages come with the choice of this professional sector of practical sports training:

1. The feedback is provided by a highly qualified staff with training in physical education, who is able to reflect on activities in sports and outdoor education.
2. The care for the participants satisfies professional guidelines, which means sports-scientifically supported and professionalized training and education standards.
3. Among other reasons, the sports-scientifically secured approach is important to avoid the risk of injuries and muscle strain caused largely by misuse, and the pedagogical setting enables goals, effects and experiences to be possible.
4. The activities can include performance and competition and provide more "incentives" than just hedonistic, exciting experiences.
5. Furthermore, the activities are relevant for schooling because they match with the teachers' curricular education.

Instruments and Variables

The diagnostic instruments consisted of different tests, which had already proved their value in pedagogical-psychological diagnosis and measurement targets relevant to outdoor education. In this paper we refer to the *Multidimensional Self-Esteem Scale (MSES)*, which belongs to the traitmethods. Mood state methods, which were also part of the diagnosis, are not addressed in this paper. They did not reach any significant difference. The MSES was standardized on a random sample ranging from 14 to 92 years with a fairly even distribution of gender being close to a sample representative of the population (Schütz & Sellin, 2006, p. 70 et seq.).

The MSES records and differentiates varying facets of self-esteem, or rather self-value, meaning the evaluative aspect of self-referring attitudes. Herein "self" is understood as a dynamic and behaviour-regulatory system (Schütz & Sellin, 2006, p. 9 et seq.).

Self-esteem is considered to be a central element of self-regulation respectively of conduct and also ultimately leads to success or failure in different parts of life.

The study was based on the assumption that experiences in the framework of activities relevant to outdoor education influence or in specific cases improve the self-esteem, that is to say, the self-regulation of each participant.

Six facets of self-value have been listed, using a total of 32 items:

- *Emotional self-esteem (EMSE)* High scores on this subscale point to a positive attitude towards oneself, whereas people with low scores tend to be discontented with themselves, to have self-doubts and a negative opinion of themselves.
- *Social self-esteem/security in contact (SECO)* People with high scores on this subscale feel secure in interpersonal contact, have low inhibitions in dealing with others and feel comfortable in encounters with people, while low scores indicate insecurity in social contact, timidity, inhibitions, etc.
- *Social self-esteem – dealing with criticism (SECR)* A person with high scores on this subscale worries less about a possible negative attitude of others towards himself/herself and is convinced that he/she is esteemed, his/her achievements are appreciated, etc. Low scores indicate a pronounced sensitivity towards criticism from others. The persons are concerned believing themselves not to be valued.
- *Self-esteem with reference to achievement (SEAC)* People with high scores on this subscale are convinced of their professional competence and feel able to complete demanding tasks, whereas persons with low scores doubt in their professional abilities and feel overwhelmed by their quotidian work.
- *Self-esteem regarding physical attractiveness (SEPA)* High scores on this subscale indicate contentment with one's own body, while persons with low scores wish for a better physical appearance, are ashamed of their body, etc.
- *Self-esteem of one's fitness and body coordination (SEBC)* High scores on this subscale show that the person feels secure and comfortable with sports activities and has a positive attitude towards his/her ability of coordination, while low scores indicate insecurity and nervousness with sports activities, as well as little trust in his/her own coordination abilities.

These subscales can be further categorized to superordinate scales:

- *general self-esteem (GSE)* This scale consists of EMSE, SECO, SECR, SEAC.
- *self-esteem with reference to the body (BSE)* consists of SEPA and SEBC.

Furthermore, the addition to a total score (TSE) is possible (Schütz & Sellin, 2006, p. 34 et seq.).

The internal consistency (Cronbach´s Alpha) of the subscales, which was calculated for the normalized sample, ranged from .75 to .87, while the same of the superordinate scales (GSE, BSE, TSE) ranged from .85 to .93 (Schütz & Sellin, 2006, p. 45).

Schütz and Sellin (2006) executed various examinations of validity for a demarcation from other diagnostic methods. They view the convergent validity as given because all used scales show high correlations with other relevant methods (Schütz & Sellin, 2006, p. 57 et seq.).

Results

Firstly, the data sets have been "adjusted", which means that only the data of those participants who answered all the questions in the respective tests were considered. In some cases when it was only a question of an insignificant number of missing data of just a single subscale, only the subscale concerned was not been included in the calculation. That means that for these participants no total score can be interpreted but only the complete subscales. In the case of the pre-post-measurement comparisons the final sample therefore consisted of 26 cases for the experimental and 19 cases for the control group.

Secondly, we used non-constrained allocation methods due to the varying sample sizes. We therefore calculated the changes from the pre- to the post-test according to Wilcoxon for the experimental and the control group separately.

The results obtained by means of Wilcoxon tests for the experimental group showed changes in a form of positive effects both for the total score (TSE) of the MSES (Z=-2.47, p<.01) and for the two superordinate scales: *general self-esteem* (GSE, Z=-1.92, p<.05) and *self-esteem with reference to the body* (BSE, Z=-2.02 p<.05). That means that the scores in the individual dimensions were higher after the activity than they were before the activity.

A further look on the particular subscales shows that this effect can be traced back to the *self-esteem with reference to achievement (SEAC)* (Z=-2.15, p<.05) and the *self-esteem physical attractiveness (SEPA)* (Z=-2.14, p<.05).

The analysis of the data from the control group did not show any significant changes between pre- and post-measurement, as expected.

To confirm this finding we analysed the differences for the post-measurement only between the experimental group and the control group by means of a Mann-Whitney U test. This time a significant change should show up in order to point out the difference between the experimental and control groups for the post measurement (after the activity). As expected, the test showed a significant result (Z=-2.08, p<.05) which confirmed our hypothesis. After the training the experimental group showed significant changes in the previously mentioned scales and subscales, whereas the participants of the control group who had no training did not.

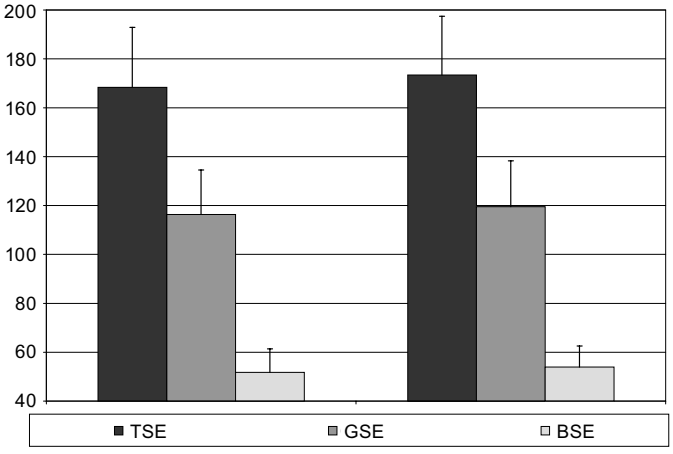

Figure 1. Arithmetic means and standard deviations for the subscales general self-esteem (GSE), self-esteem with reference to the body (BSE) and the total scale (TSE). Left: pre-test, right: post-test.

Discussion and conclusions

Our investigations on the effectiveness of interventions of outdoor education showed a positive effect – the improvement of various facets of self-esteem – as well as the differentiation of the results within the subscales (consequently different effects can be distinguished here) for the experimental group. The control group, the group that did not take part in an outdoor activity, did not reveal such a positive effect. We, therefore, assume that the changes occurred because of the outdoor education activities.

According to Kern and Schmidt (2001), outdoor education should result in an increase of individual responsibility, of a feeling of independence and an enhancement of self-development and self-confidence. The activity we examined showed its effect above all in the scales *self-esteem with reference to achievement (SEAC)* and the *self-esteem physical attractiveness (SEPA)*. In contrast, no differences could be seen between pre- and post-tests concerning the *emotional self-esteem (EMSE)* and the *social self-esteem (both the security in contact – SECO*, and *dealing with criticism - SECR)*, as well as *self-esteem of one's fitness and body coordination - SEBC*. We assume that these differences between the results in distinct scales appeared because outdoor activities did not assist or create changes according to the mentioned scales. In the next steps we should therefore examine how the results change in varying contexts. If this argument is right, an emphasis on the varying

contexts of outdoor education should lead to different patterns of results.

Another explanation referring to the previously mentioned differences of the examined activities in distinct scales might be seen in the short application period. *Emotional self-esteem (EMSE), social self-esteem (SECO, SECR)* and *self-esteem of one's fitness and body coordination (SEBC)* are usually seen as more lasting effects (see also Bandura, 1982, 1986), meaning that they might arise after a longer lasting application period.

Thus, this first experiment should be repeated with a longer period of outdoor education and testing at more points over a period of time. This experimental design can easily be combined with the previous question (effects of other kinds of activities) and a third question, the question of sustainability. We also should ask, whether the effects demonstrated can be maintained over a longer period of time and therefore assemble another group that we test again after two or more weeks.

Moreover, more outdoor education activities and different age and target groups need to be examined to answer the question of generalization and differentiation possibilities. A comprehensive comparison of the averages of the different subscales of the MSES is presented here and is informative. Thus the arithmetic means of *self-esteem with reference to the body (BSE)* for our experimental group – both for the results of the post-test (with M=55) and already for the results of the pre-test (with M=53) – are clearly above the measured and in the test manual mentioned norms (42.20 women/48.28 men). That might seem trivial in view of the participants being, without exception, sport students. A study pursuing the question whether the effects of outdoor education activities have different influences on different target groups would, however, be interesting.

Besides the attempt to answer to these open questions, we were able to show that the effectiveness of outdoor education as applied in our study can be measured with the *Multidimensional Self-Esteem-Scale (MSES).*

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UČINKOVITOST SPORTSKIH AKTIVNOSTI S ORIJENTACIJOM NA ISKUSTVENU EDUKACIJU, AVANTURISTIČKO UČENJE I EDUKACIJU U PRIRODI

Sažetak

Uvod

Članak se bavi analizom učinkovitosti sportskih aktivnosti s naglaskom na avanturističko učenje, iskustvenu edukaciju (obrazovanje iskustvom) i edukaciju u prirodi. Rezultati dosadašnjih istraživanja potvrdili su učinke navedenih aktivnosti. Ipak, rezultati tih istraživanja su kontradiktorni. To se osobito odnosi na pokušaje teorijskog ususstavljenja, kao i na rezultate koji se tiču mogućih učinaka.

Za razliku od većine dosadašnjih istraživanja, naša se studija bavi pitanjem učinkovitosti edukacije u prirodi na empirijski način. Zbog toga smo ovo istraživanje postavili tako da smo istražili različite aspekte samoprocjene. Usmjerili smo se na pitanja provedivosti i korisnosti dijagnostičkih instrumenata za procjenu različitih aspekata samoprocjene. Primijenili smo Multidimenzionalnu skalu samopoštovanja (Schutz & Sellin, 2006).

Najvažniji cilj našeg istraživanja bio je otkriti neke pozitivne učinke – unapređenje različitih aspekata samopoštovanja – kao i moguću diferencijaciju rezultata eksperimentalne grupe unutar podljestvica.

Metode

Istraživanje je provedeno na 115 studenata sporta i tjelesnog odgoja (67 u eksperimentalnoj i 48 u kontrolnoj skupini). Ispitanici u eksperimentalnoj skupini sudjelovali su na dva uzastopna kampa koja su se sastojala od sadržaja tipičnih za učenje u prirodi. Testiranje je provedeno neposredno prije početka i nakon završetka praktičnog dijela treninga testovima papir–olovka. Kontrolna grupa nije sudjelovala u aktivnostima koje su se provodile u prirodi. U dijagnostičke svrhe koristili su se različiti testovi s vrlo dobrim mjernim karakteristikama za evaluaciju pedagoško-psiholoških karakteristika i mjerenje osobina vezanih uz edukaciju u prirodi. Za ovo istraživanje korištena je multidimenzionalna skala samopoštovanja (MSWS). MSWS test bilježi i razlikuje različite aspekte samopoštovanja, ili drugim riječima samoprocjenu koja zapravo označava procjenjivački aspekt stavova prema samom sebi. Studija je utemeljena na pretpostavci da osnovica aktivnosti koje se odnose na edukaciju u prirodi utječu ili na specifičan način poboljšavaju samopoštovanje, odnosno možemo reći, samoregulaciju ponašanja svakog sudionika.

Mjerili smo šest aspekata samoprocjene: emocionalno samopoštovanje (ESWS), socijalno samopoštovanje/sigurnost u odnosim s drugima (SWKO), socijalno samopoštovanje – prihvaćanje kritike (SWKR), samopoštovanje u odnosu prema postignuću (LSWS), samopoštovanje koje se odnosi na fizičku privlačnostt (SWPA), samopoštovanje vezano uz kondicijsku pripremljenost i koordinaciju (SWSP). Navedene podljestvice mogu se dalje spojiti u dvije superordinacijske ljestvice, opće samopouzdanje (ASW), koje se sastoji od ESWS, SWKO, SWKR, LSWS, te samopoštovanje u odnosu prema vlastitu tijelu (KSW),koje čine SWPA i SWSP. Nadalje, moguće je izračunati i ukupno samopoštovanje (GSW) (Schutz & Selin, 2006).

Rezultati

Rezultati eksperimentalne grupe pokazali su promjenu u smislu pozitivnih efekata, zabilježenih kako u ukupnom rezultatu (GSW) na multidimenzionalnoj ljestvici procjene samopoštovanja ($Z=-2,47$; $p<.01$), tako i u rezultatima općeg samopoštovanja (ASW, $Z=-1,92$; $p<.05$) te samopoštovanja u odnosu na tijelo (KSW, $Z=-2,02$, $p<.05$), zabilježenih na supraordinacijskoj ljestvici primjenom Wilcoxonovog testa. Dobiveni rezultati sugeriraju da su rezultati zabilježeni u pojedinačnim testovima viši nakon aktivnosti od rezultata zabilježenih prije aktivnosti. Daljnji pregled pojedinačnih komponenata samopoštovanja pokazuje da se ti učinci mogu pripisati samopoštovanju povezanom s postignućem (LSWS) ($Z =-2,15$, $p<.05$) i samopoštovanju koje se odnosi na fizičku privlačnost (SWPA) ($Z=-2,14$, $p<.05$). U kontrolnoj skupini, kao što se i pretpostavljalo, nisu zabilježene značajne promjene.

Da bi se potvrdili dobiveni rezultati, testirana je značajnost razlika između eksperimentalne skupine nakon tretmana i kontrolne skupine koja nije bila podvrgnuta tretmanu, pomoću Mann-Whitneyjeva U-testa te je dobivena statistički značajna razlika ($Z=-2,08$, $p<.05$). Eksperimentalna je skupina nakon treninga pokazala značajne promjene u navedenim testovima, dok u kontrolnoj skupini nisu zabilježene statistički značajne razlike.

Rasprava i zaključak

Istraživanje je potvrdilo učinkovitost edukacije na otvorenom dobivenim poboljšanjima različitih aspekata samopoštovanja, kao i mogućnost diferencijacije rezultata unutar podljestvica za eksperimentalnu grupu. Budući da kod ispitanika iz kontrolne skupine nisu zabilježene nikakve promjene, može se zaključiti da su te promjene u eksperimentalnoj skupini rezultat aktivnosti vezanih uz edukaciju na otvorenom.

Očekivale su se i razlike u svim podljestvicama, ali su se one pojavile samo u nekima. Vjerojatni je razlog za izostanak pozitivnih promjena u *EMSE*, *SECO*, *SECR*, *SEBC* prekratko trajanje programa edukacije na otvorenom i socijalni kontekst koji se nije mijenjao. Zbog toga ćemo u sljedećim istraživanjima morati istražiti kako se rezultati mijenjaju u varijabilnim uvjetima obzirom na okruženje, sudionike i ciljeve te koliko su naučene vještine trajne.