



STIMULATION DEMAND IN SKIERS VERSUS SKIING TRAINING RESULTS*

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ABSTRACT

Purpose. The following paper aims to examine the influence of sensation seeking on training results of skiers with different needs for stimulation, and to verify the hypothesis that people with higher needs of stimulation can achieve better results in skiing technique tests. **Basic procedures.** In order to verify the research hypothesis, a number of tests were carried out, including Zuckerman's *Sensation Seeking Scale*. Forty-one participants in skiing courses were examined. The results achieved by the subjects in skiing technique trials and in sports tests during the course were taken as the dependent variable. In addition, correlations were established between the sensation seeking scale results and the skiing theory test results. **Main findings.** The results showed a gender-related diversification of the main factors of stimulation demand, such as thrill and adventure seeking, as well as differences in the general level of stimulation demand. A correlation was established between stimulation demand and skiing technique test results only among women (0.74**, 0.59**). **Conclusions.** The skiers examined – regardless of their sex – reveal a high level of stimulation needs in thrill and adventure seeking. It can also be stated that the correlation between stimulation demand and success in skiing training is statistically significant in the sample under examination (0.65*).

Key words: downhill skiing, stimulation demand, skiing training

Introduction

Some recreational activities, regardless of the kind of practiced sport, are often perceived as hazardous. One of the reasons for such perception could be increased demand for stimulation expressed by participants in recreation as well as a tendency to experience a great deal of sensations while undertaking recreational activity [1]. High-risk forms of physical recreation include rock climbing, bungee jumping, scuba diving, paragliding, car and motorcycle racing, etc. In fact, any other widely accessible kind of physical recreation may involve some elements of risk. Some seemingly low-risk sports may include extreme elements, depending on conditions of their practicing, e.g. longer distance, more challenging terrain (e.g. desert) or increased training loads. Such sports can be running, cycling, swimming,

sailing or various skiing forms, including progressive recreational skiing [2, 3].

It may seem that extreme recreational activity can only be undertaken by experts in particular sports. However, risk-seekers are often amateurs, including beginning skiers. Skiing amateurs who love to race down an icy slope also do crave for excitement. Practicing high-risk recreational activity can be conditioned by one's predispositions such as age, gender, skills or individual demand for stimulation [4]. Stimulation demand manifested by conscious seeking of intense skiing sensations can, in our opinion, affect the development of skiing habits and skills.

Stimulation demand is often directly associated with the term *sensation seeking*, which is defined as a personality trait. Individuals can be categorized according to their susceptibility to undertake activities generating intense sensations [5, 6]. The readiness to seek sensations regarded as an important trait of personality was described by Marvin Zuckerman [7]. On the basis of Hebb's notion of conceptual nervous system [8], Zuckerman postulated that people can display individual differences in the optimal stimulation of their nervous sys-

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tem. It means that reaching a certain level of emotional tension is necessary to generate an efficient action to complete a given task [9].

The differences between individual demands for stimulation can be affected by a variety of conditions and situations. The source of stimulation is not so much the empirical value of stimulation as its importance for an individual. Individuals with greater needs for stimulation are strongly disposed towards seeking new, intense sensations and experiences. They are also ready to face physical, social, legal and financial risks to ensure the supply of proper stimulation [10]. Zuckerman distinguished four subcategories of sensation seeking: *thrill and adventure seeking*, *boredom susceptibility*, *experience seeking* and *disinhibition*. He also suggested application of the above theory in studies of sports activity [11], assuming that the individual choice and success in a certain physical activity depends on one's need to experience intense sensations [12].

Zuckerman's sensation seeking scale has been used as an assessment tool in studies of stimulation demand among mountaineers. Freixanet [13] observed a higher level of stimulation demand among practitioners of extreme mountaineering, both climbers and skiers. Skiers have also been subject to psychological studies aimed at determination of the level of their stimulation demand (risk taking). Following Calhoon [14] and Boutera et al. [15], it can be assumed that practicing progressive recreational skiing aimed at self-perfection and achievement of higher results is associated with adoption of a specific lifestyle which fulfills the skiers' extraordinary need of stimulation. This issue should be considered by skiing recreation and skiing training specialists in terms of selection of forms or systems of skiing training that would more effectively contribute to the fulfillment of trainee skiers' needs, achievement of top sports results and expected improvement of general life quality [16]. Several research questions can be posed: In what way do skiers' diverse stimulation demands (an independent variable) affect the outcome of their actions (a dependent variable)? Is a skier's high demand of stimulation conducive to his or her attainment of better training results? What forms of skiing activity (technical skiing, ski gates trails) are undertaken only by sensation-seeking skiers? How is the aforementioned variable affected by such factors as the skiers' sex [6]?

This study aims to answer the above research questions with the help of the following research hypotheses:

1. Progressive recreational skiers display considerable stimulation demand.
2. A higher need for stimulation can lead to achievement of good results in skiing sport tests rather than in skiing technique tests.
3. Skiers' gender can be a discriminating factor in the correlation between stimulation demand and skiing training results.

Material and methods

The study sample consisted of 41 trainee skiers practicing progressive recreational skiing, who took part in training courses organized by the Association of Skiing Trainers and Instructors of the Polish Skiing Federation and the University School of Physical Education during the 2005/2006 season. The subjects included 13 women and 28 men; their mean age was 23.1 years.

For the assessment of stimulation demand (independent variable) Zuckerman's Sensation Seeking Scale [7, 17] was used, which consisted of four subscales related to particular factors of stimulation demand:

1. *Thrill and adventure seeking* (TAS) manifested by one's fondness for outdoor activities, extreme exercises and sports.
2. *Boredom susceptibility* (BS) manifested by one's reluctance to repeat exercises, sensitivity to idleness and monotony, and feeling of anxiety in reaction to routine.
3. *Experience seeking* (ES) manifested by a non-conformist lifestyle, fondness of unplanned trips, seeking company and using stimulants.
4. *Disinhibition* (Dis), manifested by one's tendency to relieve stress and seek relaxation in a self-indulgent lifestyle, alcohol consumption or erotic sensations.

Due to the nature of the study sample and the subject of the study, only the first two subscales were used, i.e. thrill and adventure seeking and boredom susceptibility. The obtained results were used to determine four levels of stimulation demand (very high, high, average and low) on the basis of Zuckerman's categorization [7], and then they were processed using the sten scale [18]. U Mann-Whitney test and Spearman correlation coefficient were used for statistical analysis.¹ The participants'

¹ All statistical calculations were made by Elżbieta Hurnik, M.Sc. from the Computation Centre of the University School of Physical Education in Poznań, Poland.

marks from sport technique tests and skiing theory tests were used to assess the skiing training results. The marking system was standardized and consisted of a 10-point scale. The markers were professional referees. The skiing sport tests were marked using the subjects' times at particular ski gates.

Results

The discussion of the obtained results should begin with an analysis of data concerning stimulation demand among the skiers under study. Tab. 1 shows that the highest level of thrill and adventure seeking (TAS) was reached by men (8.96 pts.), which translated into a very high level on the Zuckerman scale.

Slightly lower stimulation demand (7.69 pts.), but still high, was noted among women. The difference between the men's and women's results was statistically significant ($U = 2.73^{**}$), which seems to confirm the first research hypothesis.

In terms of boredom susceptibility (BS) the men's results can be regarded as average (3.68 pts.) and women's as low (2.84 pts.). The difference between the men's and women's results was statistically non-significant.

Tab. 2 presents the assessment of the subjects' skiing training level on a 10-point scale. The highest number of points was scored by the subjects in their skiing theory tests (7.6 pts.), followed by skiing technique tests (6.6 pts.) and skiing sports tests (5.3 pts.). In all tests women scored higher than men, however, the differences were statistically non-significant.

Tab. 3 reveals correlations between total stimulation demand (BS and TAS together) and skiing training results. The highest statistically significant correlation was noted in women between stimulation demand and skiing technique test results (0.74**) and sport test results (0.59*).

A statistically non-significant correlation (0.31) was also noted between the stimulation demand level and the skiing theory test results. No significant correlations

Table 1. Stimulation demand in skiers according to Zuckerman's Sensation-Seeking Scale

Factors of stimulation demand (subscales)	Women			Men			All			U Mann-Whitney test
	\bar{x}	SD	Mdn	\bar{x}	SD	Mdn	\bar{x}	SD	Mdn	
TAS	7.69	1.43	8	8.96	1.23	9	8.56	1.41	9	2.73**
BS	2.84	1.72	3	3.68	1.43	4	3.41	1.73	3	1.35
Total stimulation demand	10.54	2.69	11	12.64	2.09	13	11.97	2.47	12	2.39*

TAS – thrill and adventure seeking, BS – boredom susceptibility, Mdn – median, * $\alpha < 0.05$, ** $\alpha < 0.01$

Table 2. Assessment of skiing training results

Assessment tests	Women			Men			All			U Mann-Whitney test
	\bar{x}	SD	Mdn	\bar{x}	SD	Mdn	\bar{x}	SD	Mdn	
Skiing technique test	6.73	0.99	6.75	6.45	1.26	6.54	6.54	1.18	6.7	0.75
Skiing sport test	6.07	2.32	7.00	5.57	1.79	6.00	5.73	1.96	6.00	1.21
Skiing theory test	7.80	0.76	8.00	7.57	0.60	7.61	7.64	0.65	7.75	1.13
Total assessment score	6.87	1.20	7.17	6.53	1.04	6.55	6.64	1.10	6.79	1.24

Mdn – median

Table 3. Correlations between stimulation demand and skiing training results

Stimulation demand \ Skiing training results	BS			TAS			BS + TAS		
	Women	Men	All	Women	Men	All	Women	Men	All
Skiing technique test	0.70**	0.07	0.22	0.40	-0.11	-0.07	0.74**	-0.04	0.10
Skiing sport test	0.60*	-0.06	0.15	0.26	0.03	-0.02	0.59*	-0.05	0.08
Skiing theory test	0.40	0.04	0.10	0.05	-0.13	-0.12	0.31	-0.07	-0.02
Total assessment score	0.64*	-0.03	0.15	0.30	-0.04	-0.06	0.65*	-0.08	0.05

BS – boredom susceptibility, TAS – thrill and adventure seeking, * $\alpha < 0.05$, ** $\alpha < 0.01$

were observed among the male subjects. Considering particular factors of stimulation demand separately, it can be confirmed that the observed correlations between the studied variables are most explicit between boredom susceptibility (BS) and skiing technique test results (0.70**) and sport test results (0.60*) in women, and to a smaller extent between thrill and adventure seeking (TAS) skiing technique test results (0.40) and skiing sport test results (0.26).

Discussion

Research into sensation seeking has been often carried out in consideration of the risk involved in particular sport activities. Different sports were classified into different categories with reference to the likelihood of accidents (traumas, injuries). Downhill skiing is classified as a sport with a high injury risk [2, 12]. There is also note that people practicing high-risk sports are susceptible to boredom and seek stimulation and adventure [14, 15]. This observation is confirmed by the results of the present study. The skiers (especially men) under study featured a high level of stimulation demand. The above mentioned authors fail to describe possible correlations between the level of stimulation demand and the level of efficiency of actions in high-risk sports. The present study revealed diverse correlations between the subjects' thrill and adventure seeking and susceptibility to boredom, and their skiing training results. In terms of total stimulation demand it can be stated that, in accordance with the first research hypothesis, the skiers under study highly valued thrill and adventure seeking, outdoor activities, physical exercise of high risk and eagerness to practice extreme sports. The skiers also showed relatively greater tolerance towards their participation in boring, monotonous and repetitive activities. The observed low and average demand for novelty and diversity might be related to their adaptation to the long-term process of development of skiing skills and technique.

The second research hypothesis was not confirmed in the study. No statistically significant correlations were observed in the group of men under study, i.e. the presumption about men being adventure-seekers and achieving higher results in skiing training is not true; however, it turned plausible for the group of women. It could be that undertaking sensation-seeking activity does not affect the effectiveness of men's participation in skiing training, but it is quite possible in the case of

women. The third research hypothesis about gender-related differences was thus confirmed in the study, however, it definitely requires further research.

Conclusions

1. The female skiers under study revealed a high and the male skiers a very high level of stimulation demand in one sensation-seeking category, i.e. thrill and adventure seeking (TAS).

2. The skiers, regardless of their sex, featured a low level of boredom susceptibility, i.e. a high level of tolerance of monotonous and repetitive activities.

3. High stimulation demand is correlated with higher skiing training results in women; no such relationship was observed in the group of male skiers under study.

4. An important factor differentiating the types of correlations between selected subscales of the sensation-seeking scale (TAS and BS) and success in skiing training can be the skiers' sex.

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