

# SENSATION SEEKING IN MALES INVOLVED IN RECREATIONAL HIGH RISK SPORTS

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**ABSTRACT:** The study examined sensation seeking intensity level in males involved in recreational high risk sports and investigated whether its level depends on type of sport practised. Additionally, in case of parachutists, sport experience of study participants were scrutinised with regard to its possible impact on the level of sensation seeking. The research involved 217 males aged 17 to 45, practising recreational high risk sports, namely: parachuting (n=98); wakeboarding (n=30); snowboarding (n=30); scuba diving (n=22); alpinism (n=20); paragliding (n=17). The control group included 54 men not involved in sports. Polish version of Sensation Seeking Scale (SSS-IV) of Zuckerman was applied. Results show, that high risk sports males are featured by stronger need of sensations in comparison to control group and this concerned all but one aspect of sensation seeking variable. The only exception was the need of intellectual stimulation. Except from the thrill and adventure seeking dimension, type of sport may also be an important determinant of sensation seeking. Men practising snowboard and wakeboard presented stronger need for sensations, especially in the dimension of experience seeking, disinhibition and boredom susceptibility. Sport experience (number of jumps in parachuting) did not differentiate the level of sensation seeking among investigated parachutists. Population of sport high risk male takers was not homogeneous, and therefore in future research one should analyse specific sports (or events in a certain sport) separately.

**KEY WORDS:** sensation seeking, high risk sports, men

## INTRODUCTION

For a certain number of years already increasing interest in these leisure activities which may produce high sensations, colloquially called as a "portion of adrenaline" [15] has been noticed. The common feature of such sports is a high risk of body injury or death, and hence these sports are often referred to as „high risk” or „extreme” sports. Muszkieta and Gembiak [18, p. 478] define them as „sports which require extraoriginal skills, courage and capacity of acting in a high health deterioration risk - including death risk - situation. Involvement in such activities means overcoming extreme external hardships, mental limits and related emotions”. Following the definition of Breivik [2], high risk sport may be recognised as a form of activity in which individual accepts the possibility of serious injuries or death as an integral part of the activity itself.

Allotting certain sport to the high risk class is always an arbitrary decision. Sport gymnastics and soccer are disciplines where athletes experience more injuries than in parachuting. Yet, if something goes wrong when parachuting, results are often devastating. Some sport disciplines of forms of leisure activities include more risk than

the others. Frequently examples of these are bungee jumping, rock climbing, parachuting, gliding or scuba diving [22]. Strong emotions produced by high risk level are also produced in relatively new sport disciplines or events such as street sledding, snowboard freestyle or wakeboard. In his research, Pedersen [21] estimated the risk level in sports traditionally recognised as extreme sports. 444 respondents have produced the following ranking of activities, starting from low-risk to high-risk level: downhill skiing, free diving, bungee jumping, rock climbing, motor races, gliding and sky diving. Yet, the likelihood of participating in these forms of activities were positively correlated with how attractive they were considered to be and negatively correlated with the estimated risk level.

Many people look for strong emotions in high risk sports endangering their bodies or life. Many research results prove that participation in high risk sports is closely related to the psychological feature defined as sensation seeking [31]. According to Zuckerman [29, 31] this includes the need of experiencing diversified, new and complex situations and willingness to take physical and social risks to obtain high emotions.

Sensation seeking has a four folded structure [32] and includes:

- Thrill and adventure seeking, which defines the need of engaging in these physical activities which provide exceptionally strong sensations and experiences. Such activities include parachuting, mountaineering or scuba diving. They are perceived as relatively risky activities. This fact discourages people of low sensation seeking level and draw in those, who look for high emotions rewards and not risk itself.
- Experience seeking is a disposition to search new sensations and new experiences through involvement in music, arts, travelling, non-conformist life style and within the group of people representing similar life attitude.
- Disinhibition refers to searching sensations based on hedonistic perception of life. Such an attitude may be reflected in short-term sexual relationships, alcohol abuse, gambling disposition. Socially accepted forms of this type of ancient sensation seeking would be for example participation in various types of carnivals or festivals.
- Boredom susceptibility manifests in aversion to mundane and repetitious activities and anxiety and annoyance as a reaction to them. It is often accompanied by aversion to individuals who are viewed as not very exciting and interesting, even if they are trustworthy and reliable.

The need of stimulation and related behaviour, are determined by genes. Many research claim that biological marker of sensation seeking is monoamine oxidase enzyme (MAO). It is responsible for inactivation and breaking down particles of dopamine, which stimulates individuals to be active and gives energy to seek pleasure. High level of MAO reactivity results in more passive behaviour and lower susceptibility to taking risk [33].

Analysis of many research results let Zuckerman [32] describe relationship between sensation seeking and demographic variables. Hence, it is known that younger individuals are characterised with higher average level of sensation seeking in comparison to elder groups. Men are keener to take risky behaviours than women. Research focused on investigating the relationship between sensation seeking and risk taking proved, that if risk taking is the result of stimulation needs, it is strongly impulsive and pleasure-seeking based. Individuals of high sensation seeking needs level take risks without considering risk level and possibility of negative consequences. Their actions are not the result of rational decisions, but reactions to temporal impulses. People with high stimulation needs are also featured with lower level of anxiety in risky situations [22].

Sensation seekers get involved in various activities increasing stimulation capacity (e.g. high-stimulating exercises, taking drugs, car speeding). Activities leading to desired level of stimulation differ with regard to the risk level. Risk taking is correlated with experience seeking, but it is not the major motive of behaviour [31]. Experience seekers accept the risk as a price for stimulation, but some of them do not seek risk for its own sake [22]. They try to limit it by applying various safety measures. Risk takers may yet get involved in a variety

of activities, from taking psycho stimulating drugs to extramarital sex or gambling.

Attractive and socially acceptable sources of stimulation may be found in risky professions, including very stimulating new and changing tasks and actions. Another socially accepted form of activity may be playing high risk sports. There are a number of specific features of such sports which attract sensation seekers. They include always new and strong sensations and experiences that can not be found in everyday life [10]. Zuckerman [30] defines high risk sports as these where we find high physical risk and there are evidences of serious accidents. His examples were sky diving, car races, gliding, free diving and downhill skiing. On the other hand, the least risky sport would be golf, swimming or marathon runs, where we do find health threats and injuries, but the risk of serious accidents is very low. Between these two extremes, Zuckerman [30] placed moderate risk level sports such as American football or rugby, where serious injuries are feasible, but risk of death is relatively low.

Regardless to the type of sport activity, experience seekers play sports more frequently than other individuals [31]. When within sports domain, they are more prone to select risky sport disciplines [27]. Individuals practising such sport disciplines (both on competitive and recreational level) have stronger need for sensations than general population or control groups, especially with regard to thrill and adventure seeking and experience seeking [3, 6, 8, 9, 10, 16, 23, 27]. Some scientists suggest that claiming that people playing high risk sports are more susceptible to thrill and adventure seeking is a tautology. Relevant sub-scale (TAS) Sensation Seeking Scale – research tool most commonly applied in diagnosis of sensation seeking variable – includes questions concerning practising sports such as parachuting or downhill skiing [14].

Unequivocal results were received with regard to disinhibition. Individuals practising risk sports in some cases were claimed to have a susceptibility for hedonistic search for pleasure in comparison to control groups [5, 10], and in some research this pattern was not confirmed [3, 9]. Sometimes, moderate boredom susceptibility was also detected with risk sport risk taking individuals [23].

Significant body of research on relationships between seeking sensations and practising sports focused on defining differences between individuals getting involved in extreme sports and these who either not practise sports at all or prefer less risky forms of sport or physical recreation activity [1, 10, 28]. Comparative comparisons between representatives of specific extreme sports were carried out less frequently. Traditionally it was assumed that high risk athletes are homogeneous group [7]. However, Breivik [2] suggests that high risk sports athletes should be scrutinised separately because of essential personality features differences. The same author claimed, that these, who practise parachuting are more prone to sensation seeking, especially on thrill and adventure seeking and disinhibition dimension in comparison to people practising mountaineering [2]. Jack and Ronan [10] found out the highest level of sensation seeking with sky divers, followed by alpinists, gliders and car races.

Significant differences concerned thrill and adventure seeking and experience seeking. Investigated groups did not differ with regard to boredom and disinhibition susceptibility.

Years of practising sports and sport level may be also factors related to personality traits differences, including sensation seeking need differences [12]. As a result of a selection process athletes who remain in risk sports and continue their involvement have psychological "profile" best suited to this form of activity [4]. According to the research results of Breivik, Roth and Jørgensen [5], experienced parachutists are featured with stronger sensation seeking susceptibility in comparison to the novice parachutists. Johnsen [11] found out that expert parachutists obtain higher scores in case of sensation seeking than individuals dropping out from parachuting. Parachutists who have executed more jumps, experts in this field, had more extreme profiles of sensation seekers in comparison to their colleagues with lower jump score [11]. The number of jumps was positively correlated with sensation seeking indicators only in case of experienced parachutists group (except boredom susceptibility) [5].

The aim of the research was to determine sensation seeking intensity level in males practising high-risk sports and whether its level depends on type of sport practised. Additionally, in case of parachutists, experience of study participants were scrutinised with regard to its possible impact on the values of sensation seeking

## MATERIALS AND METHODS

The research involved 217 males aged 17 to 45 ( $M=26.29$ ;  $SD=6.205$ ) practising recreational high-risk sports, namely: parachuting ( $n=98$ ); wakeboarding ( $n=30$ ); snowboarding ( $n=30$ ); scuba diving ( $n=22$ ); alpinism ( $n=20$ ); paragliding ( $n=17$ ). The group of parachutists was divided into two sub-groups – experts ( $n=50$ , from 110 to 5500 jumps,  $M=779.92$ ;  $SD=871.378$ ) and novice ( $n=48$ , from 1 to 15 jumps,  $M=5.00$ ;  $SD=4.753$ ) - based on the number of jumps executed. Additionally, 54 men aged 18 to 42 ( $M=27.31$ ;  $SD=5.904$ ), non-sport practitioners were investigated as a reference group. Experienced parachutists were much older ( $M=33.82$ ;  $SD=7.343$ ) than the rest of control groups, that did not differ a lot in terms of age.

Polish version of Sensation Seeking Scale (SSS-IV) of M. Zuckerman was applied in the research. It includes of 68 questions

consisting the following scales: thrill and adventure seeking (TAS), experience seeking (ES), disinhibition (Dis), boredom susceptibility (BS) [20].

Original version of the scale has satisfactory psychometric characteristics [29]. Preliminary tool adaptation to Polish conditions was conducted by Oleszkiewicz-Zsurzs [19, 20]. Polish version of SSS-IV scale was supplemented by sub-scale diagnosing intellectual stimulation susceptibility (I). We could also calculate the general sensation seeking indicator – sensation seeking (general, G). The theoretical variable of the outcomes in particular scales is the following: TAS: 0-14 ; ES: 0-15; Dis: 0-17; BS: 0-18; I: 0-7; G: 0-20. The attempt to adapt the tools to the Polish conditions is not fully satisfying. Therefore extra caution should be taken with interpreting the obtained outcomes. Reliability coefficients (internal stability) oscillate between 0,77 for scale I and 0,87 for scale ES.

Diagnostic accuracy of the tool is not satisfying according to the adaptation's author [20]. There was also an attempt to adapt a newer version of the scale (SSS-V), but its outcomes were not published and they are believed to be unsatisfactory as well [24]. Therefore a decision was taken to use version SSS-IV, which had been frequently used for research in Poland. The application of scale SSS allows making comparisons between obtained outcomes and outcomes from the previous research.

The research was anonymous and done on groups of several people. The subjects doing high-risk sports (excluding parachutists) were recruited at the place of their activity as well as on internet forums devoted to a given sports discipline. The research on parachutists was conducted in 2008 and 2009 in the Warsaw and Bialystok flying clubs.

The statistical analyses were done with the use of SPSS package, version 12 using one dimension analysis of variance ANOVA with post hoc Bonferroni tests.

## RESULTS

In order to determine, whether men practising recreational risk sports differ from non-sport men with regard to sensation seeking, high risk sports group ( $n=217$ ) results were compared to the results of a control group ( $n=54$ ) (Tab. 1). On all but one (intellectual stimulation) scales sport men show higher scores in comparison to non-sport sample, which indicated stronger intensity of sensation

**TABLE 1.** ASENSATIONS SEEKING ( $M \pm SD$ ) AMONG HIGH RISK SPORTS PARTICIPANTS AND NONPARTICIPANTS

Variables	Groups	High risk sports ( $n=217$ )	Nonparticipants ( $n=54$ )	F	p
Sensation seeking		12.03 $\pm$ 3.156	8.06 $\pm$ 4.186	59.570	<0.0001
Thrill and adventure seeking		10.85 $\pm$ 2.396	7.20 $\pm$ 3.259	85.687	<0.0001
Experience seeking		8.84 $\pm$ 2.845	6.28 $\pm$ 3.389	32.474	<0.0001
Disinhibition		10.28 $\pm$ 3.023	7.76 $\pm$ 3.923	26.424	<0.0001
Boredom susceptibility		10.36 $\pm$ 3.294	6.81 $\pm$ 3.910	46.451	<0.0001
Need for intellectual stimulation		4.75 $\pm$ 1.646	4.91 $\pm$ 1.470	0.430	0.512

seeking feature in all its sub-scales in risk takers. The biggest differences were observed in case of thrill and adventure seeking, which is quite an obvious result when we know that TAS scale measures fondness to outdoor activities and physical risk, including high risk sports. Both groups did not vary significantly with regard to the need of intellectual stimulation, willingness to solve difficult and cognitively complex tasks and satisfaction related to such activities.

To decide whether intensity of sensation seeking differs depending on sport discipline, one-way analysis of variance was carried out for the group of men practising extreme sports (Tab. 2). Significant differences were recorded for five sub-scales of Sensation Seeking Scale. The most significant difference concerned psychological nature stimulation seeking (ES). Post hoc tests of Bonferroni show, that readiness to non-conformist behaviour was higher in snowboarders and wakeboarders, and in both cases it was significantly higher than in all other remaining groups (wakeboarders vs. novice and experienced parachutists  $p<0.001$ ; alpinists  $p=0.002$ ; paragliders  $p=0.003$  and scuba-divers  $p<0.001$ ; snowboarders respectively vs. novice and experienced parachutists  $p<0.001$ ; alpinists  $p=0.002$ ; paragliders  $p=0.002$  and scuba-divers  $p<0.001$ ). Men practising snowboard and wakeboard did not vary from each other. Results of remaining groups were also quite homogeneous.

Snowboarders and wakeboarders were also specific with regard to boredom susceptibility. Yet, in this case differences were less significant: wakeboarders reached higher scores from both groups of parachutists ( $p<0.001$  and  $p=0.009$ ), while snowboarders – only from novice parachutists ( $p=0.015$ ). Tendency level difference ( $p=0.066$ ) were also recorded between wakeboarders and scuba divers.

Disinhibition susceptibility was significantly higher in the group of snowboarders and wakeboarders in comparison to parachutists (regardless from their experience) (wakeboarders vs. novice  $p=0.024$  and experienced  $p=0.027$ ; snowboarders respectively  $p=0.028$  and  $p=0.032$ ). Remaining groups did not differ significantly with regard to this sub-scale.

Taking into account general sensation seeking rate, scuba divers differ most significantly from other investigated risk takers.

Their readiness to seek sensations, regardless to their source, was lower than in case of experienced parachutists ( $p=0.033$ ), alpinists ( $p=0.001$ ), wakeboarders ( $p=0.001$ ) and snowboarders ( $p<0.001$ ).

The lowest variability concerned seeking intellectual stimulation. The level of this variable was the highest in expert parachutists in comparison to snowboarders ( $p=0.033$ ).

No significant inter-group differences were observed for the thrill and adventure seeking scale.

Experience in practising physically risky sport disciplines does not differ susceptibility to seek sensations. No differences were observed between expert parachutists and novice in any dimension of sensation seeking.

## DISCUSSION

At the beginning of the discussion it must be emphasized that the obtained results should be treated with extra caution due to imperfection of applied measurement tool. However, one must remember that until now a scale in the Polish language that fulfills all the psychometric requirements and diagnoses the dimension of seeking sensations has not been developed. Because the norm for Polish population was not developed it is impossible to define the level of intensity of seeking sensation. It is only possible to compare the results among control groups. Due to the limited tool and small groups, the possibility of generalization of the obtained results is limited.

Results of this research suggest that individuals involved in high risk sports have stronger than control group sensation seeking susceptibility. In compliance with preliminary assumptions, differences between risk takers and non-sport men were the strongest in case of thrill and adventure seeking. It is this component of sensation seeking variable, which defines readiness to engage in physical activities providing exceptionally strong sensations and experiences due to the accompanying physical risk. Significant differences were noticed also for remaining components, including disinhibition and boredom susceptibility, which may confirm results of some previous research [5, 10].

Only in case of intellectual stimulation dimension, which was introduced to applied in the research Polish version of SSS scale, there were no significant differences between sport risk takers and

**TABLE 2.** SENSATIONS SEEKING ( $M\pm SD$ ) AMONG MEN PRACTISING HIGH RISK SPORTS

Groups	Parachuting - novice	Parachuting - expert	Wakeboard	Snowboard	Alpinism	Paraglinding	Scuba diving	ANOVA	
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	<i>F</i>	<i>p</i>
G	11.56±2.946	11.96±2.755	13.07±3.151	13.37±2.748	13.00±3.356	11.08±2.678	9.40±3.747	4.874	<0.0001
TAS	11.52±2.000	11.02±2.599	10.73±2.572	10.53±2.224	10.50±2.482	10.67±2.060	9.70±2.849	1.607	0.147
ES	7.98±2.654	7.86±2.579	11.13±1.613	11.20±1.955	8.40±2.563	7.92±2.234	6.95±2.800	14.252	<0.0001
Dis	9.44±3.512	9.48±2.794	11.67±2.218	11.63±2.484	10.80±2.687	9.42±3.423	10.35±2.907	3.819	0.001
BS	8.96±3.445	9.70±3.253	12.30±2.756	11.47±3.104	11.20±3.139	11.00±1.954	9.60±3.119	5.037	<0.0001
I	5.08±1.622	4.86±1.678	4.47±1.525	3.87±1.978	4.95±1.638	5.25±0.965	4.65±1.387	2.230	0.042

Legend: G – sensation seeking, TAS – thrill and adventure seeking, ES – experience seeking, Dis – disinhibition, BS – boredom susceptibility, I – need for intellectual stimulation

non-sport men observed. One should assume that cognitive stimulation is searched outside the domain of sport and physical activity, through arts, literature, in other cultures and while solving difficult and complex intellectual tasks. Since original version of SSS scale does not include this component, there is little known on relationships between susceptibility to seek strongly stimulating sensations and experiences on physical, emotional and intellectual dimension. It is therefore difficult to answer the question whether cognitive challenges may increase arousal level to the same extend as physical activity or emotional situations.

Results of comparing sensation seeking level of sport risk takers seem to question the thesis of homogeneity of this population [7]. Only the level of thrill and adventure seeking level was similar for all groups, which may be another evidence supporting thesis that diagnosing this feature in the risk taking group with a use of TAS scale is indeed a tautology [14]. And that is why some scientists rule out TAS scale result when investigating risk takers [10]. Some more accurate research tools are also suggested: Tension Risk Adventure Inventory (TRAII) [26], Arnett's Inventory of Sensation Seeking (AISS) [28] or designed by Zuckerman and his team as a response to the critique of SSS, scale Imp-SS. The latter serves diagnosing impulsiveness, which is closely and empirically related to sensation seeking.

In all remaining scales, similarly to results of Breivik [2] and Jack and Ronan [10], significant differences were observed. The most different groups included male snowboarders and wakeboarders, who presented the strongest susceptibility to seeking sensations and were more prone to experience boredom and prone to disinhibition. Due to the small number of scrutinised individuals, based on collected data, it is difficult to state that we have observed some universal pattern. Mueller and Peters [17] claimed that snowboarders had high level of extraversion, agreeableness and scrupulousness than their control group. They were also more emotionally stable, have smaller aversion to taking risk and reveal lower stress level. Interestingly, their openness to new experiences was lower in comparison to reference group. Authors, who explain this pointing at the content of questions diagnosing this dimension of personality and concerning interests in literature, arts or philosophy, claim that snowboard is a "creative" sport discipline and requires openness in physical activity domain, but not necessarily in culture or science. People practising snowboard are considered as free spirits and independent thinkers whose behaviour is infused with notions of freedom and independence [13]. In our research snowboarders obtained significantly lower score in seeking intellectual stimulation than novice parachutists.

No research evidence was found concerning personality traits of men practising wakeboard, which is a relatively young sport discipline.

Sometimes it is considered as water alternative for snowboard. In wakeboarding we find elements of street skateboard and snowboard freestyle [25]. One may suspect that since these disciplines are similar as far as primary technique features are concerned, snowboard and wakeboard have similar (or at least partially similar) participants' psychological requirements, which explains substantial similarities of investigated snowboarders and wakeboarders with regard to the level of sensation seeking.

Results of research do not confirm expected experience-based variability of sensation seeking characteristics in parachutists, even if it was supported by filter system concept of Breivik [4], who claims that athletes dropping out on subsequent steps of sport career do not fit with their personality do specific requirements of certain sport discipline. Observations of Johnsen [11] revealed that from all those who try parachute jumping, only 15% continue parachuting and 85% gives up parachuting before executing 10 jumps. Breivik [in: 5], investigating 185 persons who did not continue parachuting noticed, that key hindrances of sport involvement were reported to be lack of time, no sport club nearby to jump in, too high financial cost of such activity and lack of motivation. The author thinks that respondents' answers are results of rationalisation process, and that in reality there are more intrinsic and personality traits related reasons of giving up parachuting.

In group of novice parachutists, there were only individuals who did not execute more than 15 jumps. Probably some of them dropped out on subsequent stages of parachuting training. Nevertheless, no differences were observed from so called expert group of parachutists with regard to the general susceptibility to seeking sensation and its specific components. This result is contrary to the results of Johnsen [11], who observed relationship between number of jumps executed and susceptibility to seeking sensation. Research results of Breivik, Roth and Jörgensen [5] also showed higher scores of 21 experienced parachutists (over 400 jumps) in ES scale in comparison to 14 novice parachutists with less than 19 jumps account. Number of respondents in this research was smaller than in our research, but advanced group of parachutists was much more experienced (average 1000 jumps). Both groups were also different with regard to age. It seems that these problems require more research attention.

## CONCLUSIONS

Research results suggest that population of men practising high risk sports is not homogeneous. Hence, one should rather investigate specific sports or even events within sport discipline (for example downhill and slalom races in Alpine skiing or freestyle in snowboard).

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