

# SENSATION SEEKING AS ONE OF THE MOTIVATING FACTORS FOR PERFORMING SKYDIVING

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## Abstract

**Introduction.** For some time, the issue of participating in high-risk sports, including skydiving, has been linked to the trait of sensation seeking, but skydivers do not constitute a homogeneous group in terms of this factor. The aim of the study was to determine the role of the need for sensation in performing skydiving and to examine whether the importance of this factor differs depending on gender. **Material and methods.** The study included a total of 143 skydivers (98 men and 45 women) aged from 17 to 49 years with different levels of expertise in skydiving. In total, 73 respondents were categorised as novices, and 70 were considered experts. Novice skydivers were defined as having completed no more than 10 jumps in their lives. Expert skydivers were persons who had made at least 100 jumps in their lives and had a licence to perform skydiving independently, without instructor supervision. The need for stimulation was measured using the Sensation Seeking Scale IV by Zuckerman, in its Polish version by Oleszkiewicz-Zsurz. **Results.** Since a high proportion of individuals with a strong need for sensation was found among both men and women, it can be concluded that it is an important factor in primary selection in skydiving (when the sport is undertaken), regardless of gender. **Conclusions.** The significance of sensation seeking as a factor in secondary selection in skydiving (when the sport is being performed) differs depending on the particular dimension of sensation seeking and gender. Susceptibility to boredom is probably a significant factor in secondary selection in women.

**Key words:** skydiving, psychology, high risk sports, gender, motivation

## Introduction

In recent years, we have observed growing interest in various forms of activity that are associated with providing participants with strong emotions and intense experiences [1, 2]. Practising some sports carries health risks and even the risk of death. Such activities are often referred to as extreme sports or high-risk sports. According to the definition by Breivik, a high-risk sport is a discipline in which one has to accept the possibility of serious injury or death as an inherent part of the activity [3].

For some time, the issue of participating in high-risk sports has been linked to the personality trait of sensation seeking [4, 5, 6]. Zuckerman described sensation seeking as the need for new, varied, and complex experiences and the readiness to take physical and social risk in order to meet this need [7]. According to the author, sensation seeking consists of four dimensions. The first dimension, identified as thrill and adventure seeking, describes the need to engage in physical activity that provides extraordinary physical sensations, including sports such as skydiving, mountain climbing, and scuba diving. The second dimension, identified as experience seeking, manifests itself in the tendency to seek cognitive stimulation by engaging in activities that provide intense sensory experiences, including music, art, and travel, as well as leading non-conformist lifestyles and making friends with like-minded unconventional people. The third dimension, disinhibition, is connected with sensation seeking through hedonistic attitudes towards life, including having risky sexual relationships, abusing alcohol, and gambling. Inner or outer constraints do not stop individuals from

engaging in such behaviour. The fourth dimension, susceptibility to boredom, manifests itself as an aversion to monotonous activities, as well as restlessness and impatience when a person is feeling bored.

Sensation seekers accept risk as a possible result of providing themselves with an optimal level of arousal. They enjoy being involved in activities and situations that have elements of novelty and stimulation and satisfy their hedonistic needs [8]. Such people often do not pay attention to whether their behaviour is socially approved [7]. However, this does not mean that sensation seekers always undertake activities that exceed or are barely within the bounds of laws, social norms, or moral norms. A satisfactory level of stimulation can be achieved by selecting highly stimulating lifestyles and social relationships, as well as highly stimulating professions, such as those of a Special Forces soldier, mountain rescuer, or fire fighter [7, 9, 10]. Sports activity (skydiving, mountain climbing, scuba diving, paragliding, etc.) also offers a socially acceptable source of intense sensations [7, 8].

According to many researchers [9, 10, 11, 12], a strong need for sensation is a distinguishing feature of skydivers. A study by Bołdak and Guskowska, however, has found this group to be heterogeneous in terms of personality traits, including sensation seeking [13]. It is thus worth investigating whether or not sensation seeking is a motivating factor for undertaking skydiving.

Selection may take place already when skydiving is undertaken. It can be assumed that skydiving training is taken mainly by people with a strong need for stimulation. In this case, sensa-

tion seekers should dominate already among novices. The selection which takes place at the time of undertaking the sport can be called "primary selection".

Selection can also take place in the later stages of performing skydiving. This can be called "secondary selection". People with a lower need for sensation may discontinue a strongly stimulating activity due to having exceeded the optimum level of arousal [14]. According to Breivik, due to the selection present in risky sports, only individuals whose personalities "match" a given form of activity will decide to continue the sport [15]. However, research results are not consistent with respect to this issue. Some authors have suggested that there is a greater need for stimulation in less experienced persons [16]. Others have reported that novices have a lower need for sensation: for example, expert skydivers scored higher on the scale of sensation seeking than novices and people who completed the skydiving course, but then they did not jump with a parachute [9].

According to Zawadzki, selection through temperament traits in risky sports is stronger in the case of women, as they are characterised by a lower need for stimulation than men [14]. Sensation seeking is one of the dimensions of temperament. In the general population, men engage in risky behaviour more often than women [7, 17]. Women who engage in high-risk sport have a higher-than-average need for stimulation [7, 18].

Inconsistencies in the results of previous studies raise several questions about the importance of sensation seeking in primary and secondary selection in skydiving, concerning whether or not the need for sensation is actually a motivating factor in skydiving, the direction of the relationship, and whether or not the importance of this trait differs depending on gender. If primary selection does take place, skydivers should be dominated by people with a strong need for stimulation (regardless of their level of expertise in skydiving). If the need for sensation is a factor in secondary selection, sensation seeking should be significantly different between novice and expert skydivers. With increasing levels of expertise, the group should become more and more homogeneous. However, selection in the opposite direction cannot be ruled out. Extreme sensation seekers may eventually stop practising the discipline due to the fact that after losing its novelty, it ceases to be sufficiently stimulating for them. If sensation seeking is an important factor in primary and secondary selection only in women, only female skydivers should manifest a stronger need for sensation in comparison to the population norms, whereas female novices should be characterised by a smaller need for sensation than female experts. These differences should not occur in men.

### Material and methods

The study included a total of 143 skydivers (98 men and 45 women) aged from 17 to 49 years (mean = 30.07; SD = 7.10) with different levels of expertise (number of jumps in the entire group: mean = 333.56; SD = 636.94). The subjects were arbitrarily classified into one of the two groups according to their level of expertise, after consultation with an experienced and professionally active skydiving instructor from the Aero Club of Warsaw.

In total, 73 respondents were considered novices, which means they had done no more than 10 jumps (mean = 5) in their lives. The group of expert jumpers included individuals having a valid Certificate of Qualification issued by the President of the Polish Civil Aviation Authority. According to Polish law, this licence is mandatory in order for a person to be able to perform

skydiving independently, and it requires passing a practical and theoretical examination. The group of expert skydivers comprised 70 participants, who had done at least 100 jumps (mean = 675) in their lives. There were no statistical age differences between the two groups.

The research was conducted in two Polish aviation clubs (in Warsaw and Białystok). Participation in the survey was voluntary, and the respondents did not receive any remuneration. All the respondents practised amateur skydiving and did not belong to sporting clubs or the national team. The research project was accepted by the Senate Research Ethics Committee of the Józef Piłsudski University of Physical Education in Warsaw.

The need for stimulation was measured using the Sensation Seeking Scale (SSS) by Zuckerman [8] (version IV), in its Polish version [19]. The questionnaire consists of 68 questions that require choosing between two extremes, for example, "I don't like to skydive at all" and "I would love to try skydiving". The research tool was adapted to Polish conditions by Oleszkiewicz-Zsurzs [19, 20]. The Polish version of the SSS-IV scale differs from the original in that it has a smaller number of items. The theoretical variables were determined using the following scales: the General Sensation Seeking (GSS) scale: 0-20; the Thrill and Adventure Seeking (TAS) scale: 0-14; the Experience Seeking (ES) scale: 0-15; the Disinhibition (Dis) scale: 0-17; and the Boredom Susceptibility (BS) scale: 0-18. In the original version, the scale has satisfactory psychometric properties [8]. However, attempts to adapt the tool to Polish conditions have not been completely satisfactory; hence, one should exercise caution while interpreting the results. The reliability indices of the scale (internal consistency) varied from 0.77 for the Dis scale to 0.87 for the ES scale [19]. The diagnostic accuracy of the tool is not satisfying according to the author of its Polish adaptation [19]. There has also been an attempt to adapt a newer version of the scale (SSS-V), but its outcomes were not published, and they are believed to have been unsatisfactory as well [21]. Therefore, a decision was taken to use version SSS-IV, which has been frequently used for research in Poland. Applying the SSS scale made it possible to make comparisons between the outcomes of the current study and the outcomes of previous research.

All statistical analyses were performed using the statistical IBM package SPSS19 (SPSS Inc., Chicago, IL).

### Results

In order to determine the intensity of sensation seeking in the group of skydivers, point scores were converted to the standard ten (sten) scale, according to the norms for the Polish population. The distributions of sten scores at three levels – of low scores (up to a sten score of 4), average scores (sten scores of 5-6), and high scores (a sten score higher than 7) – are presented in table 1. In women, there was a clear overrepresentation of high scores on all SSS scales, especially ES, TAS, and Dis (more than half of the respondents had high scores). As far as men are concerned, nearly half of the respondents obtained high scores only on the Dis scale. However, regardless of gender, the proportion of persons with a strong need for sensation was greater among skydivers than in the general population.

Multivariate analysis of variance (MANOVA) was used in order to determine the variation of scores depending on gender and the level of expertise in skydiving. A significant main gender effect was found for the scores of the entire scale ( $F = 3.306$ ;  $p = 0.005$ ;  $\eta^2 = 0.129$ ). The interaction between group (novices and experts) and gender reached the level of a trend ( $F = 2.005$ ,

**Table 1.** Sten scores in general sensation seeking and the dimensions of sensation seeking for men (n = 98) and women (n = 45)

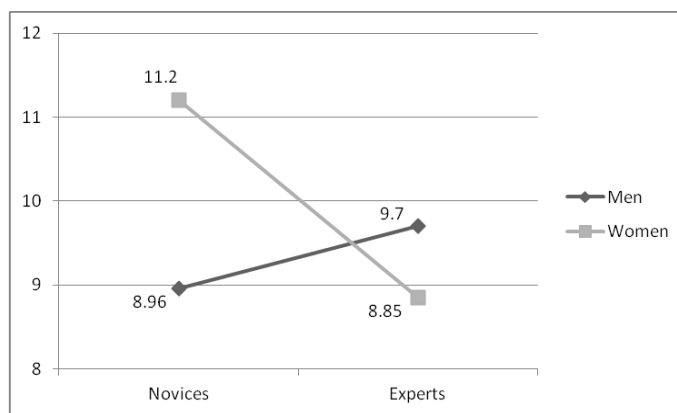
| Variable                           | Low scores |       | Average scores |       | High scores |       |
|------------------------------------|------------|-------|----------------|-------|-------------|-------|
|                                    | Men        | Women | Men            | Women | Men         | Women |
| General sensation seeking (GSS)    | 13%        | 4%    | 58%            | 58%   | 29%         | 38%   |
| Thrill and adventure seeking (TAS) | 8%         | 7%    | 55%            | 33%   | 37%         | 60%   |
| Experience seeking (ES)            | 11%        | 7%    | 47%            | 24%   | 42%         | 69%   |
| Disinhibition (Dis)                | 13%        | 2%    | 39%            | 47%   | 48%         | 51%   |
| Boredom Susceptibility (BS)        | 20%        | 18%   | 48%            | 42%   | 32%         | 40%   |

p = 0.069,  $\eta^2 = 0.082$ ). The group effect was not statistically significant (F = 0.027, p = 0.714,  $\eta^2 = 0.027$ ). These data suggest that the level of expertise does not have an impact on sensation seeking among skydivers, but the importance of this factor may vary depending on gender.

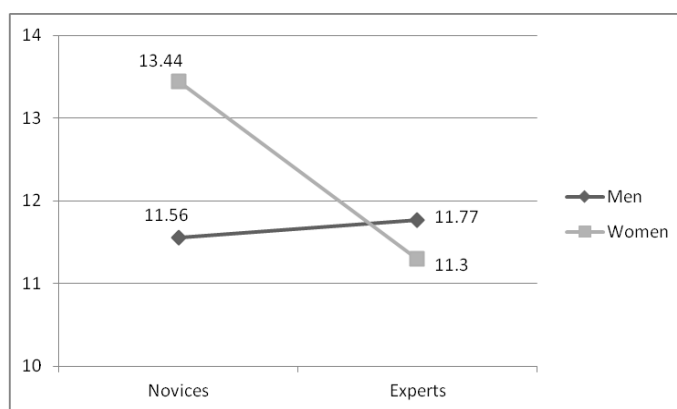
Adjusted models proved to be significant in the case of ES (F = 3.468, p = 0.018,  $\eta^2 = 0.070$ ), BS (F = 2.831, p = 0.041,  $\eta^2 = 0.058$ ), and general sensation seeking - GSS (F = 2.719, p = 0.047,  $\eta^2 = 0.055$ ).

The analyses of individual dimensions did not prove a significant group effect (tab. 2). The effect reached the level of a trend in ES - slightly higher scores were found among novices.

The effect of gender was significant only for ES, with higher scores in women. In the case of BS, there was a significant interaction between group and gender (fig. 1). In the group of novices, women were characterised by higher BS, while in the group of expert skydivers, there were no gender-related differences. The level of expertise significantly differentiated BS among women, and it was higher in novices. There were no differences in BS among men. A significant interaction between gender and the level of expertise was also observed in the case of general sensa-



**Figure 1.** Interaction between group x gender (Boredom Susceptibility, BS)



**Figure 2.** Interaction between group x gender (General Sensation Seeking, GSS)

tion seeking (GSS) (fig. 2), and the direction of the relationship was the same. There were no significant effects of gender or the level of expertise or any interactions between them in the case of TAS and Dis.

**Table 2.** Two-way analysis of variance (group x gender) of general sensation seeking and the dimensions of sensation seeking

| Variable                           | Group   |      |         |      | Gender |      |       |       | ANOVA       |              |              |             |              |              |             |              |              |
|------------------------------------|---------|------|---------|------|--------|------|-------|-------|-------------|--------------|--------------|-------------|--------------|--------------|-------------|--------------|--------------|
|                                    | Novices |      | Experts |      | Men    |      | Women |       | Group       |              |              | Gender      |              |              | Interaction |              |              |
|                                    | M       | SD   | M       | SD   | M      | SD   | M     | SD    | F           | p            | $\eta^{2*}$  | F           | p            | $\eta^2$     | F           | p            | $\eta^2$     |
| General sensation seeking (GSS)    | 12.21   | 3.23 | 11.77   | 2.75 | 11.77  | 2.84 | 12.49 | 3.30  | 2.67        | 0.105        | 0.019        | 1.30        | 0.256        | 0.009        | <b>5.66</b> | <b>0.019</b> | <b>0.039</b> |
| Thrill and adventure seeking (TAS) | 11.33   | 2.01 | 10.96   | 2.47 | 11.27  | 2.33 | 10.89 | 2.07  | 0.66        | 0.419        | 0.005        | 0.91        | 0.340        | 0.007        | 0.17        | 0.677        | 0.001        |
| Experience seeking (ES)            | 8.63    | 2.90 | 7.97    | 2.52 | 7.92   | 2.60 | 9.13  | 2.86  | <b>3.14</b> | <b>0.079</b> | <b>0.022</b> | <b>5.45</b> | <b>0.021</b> | <b>0.038</b> | 2.33        | 0.129        | 0.016        |
| Disinhibition (DIS)                | 9.58    | 3.51 | 9.19    | 2.77 | 9.46   | 3.15 | 9.22  | 3.23  | 1.38        | 0.242        | 0.010        | 0.30        | 0.585        | 0.002        | 1.56        | 0.214        | 0.011        |
| Boredom Susceptibility (BS)        | 9.73    | 3.59 | 9.46    | 3.25 | 9.34   | 3.35 | 10.16 | 3.529 | 1.76        | 0.187        | 0.012        | 1.32        | 0.253        | 0.009        | <b>6.50</b> | <b>0.012</b> | <b>0.045</b> |

\*  $\eta^2$  - strength of relationship.

## Discussion

The purpose of the study was to determine the role of sensation seeking in performing skydiving and to examine whether its importance differs depending on gender.

Since a high proportion of persons with a strong need for sensation in its different dimensions was found among both men and women, it can be concluded that this variable acts as a factor in primary selection, already at the initial stage of undertaking the sport. This has been confirmed by previous studies in which authors found that the trait of sensation seeking is a significant factor that determines taking up high-risk sports [3]. However, the importance of the dimensions of sensation seeking varies, and the biggest role is probably played by experience seeking, especially among women.

The dimensions of thrill and adventure seeking, disinhibition, and boredom susceptibility probably do not play a great role in secondary selection (while the sport is being performed) – no significant main effects of the level of expertise in skydiving were found for these factors in our study. This means that none of these dimensions seems to be related to whether or not a person chooses to continue practising skydiving. Experience seeking was the only dimension that differed slightly depending on the subjects' level of expertise. The results of the research carried out by Breivik et al., which suggest that experts' need for sensation is stronger than that of novices and those who stop practising the sport, have not been confirmed either [9]. It is worth emphasising, though, that the aforementioned studies included only men.

Experience seeking seems to be a particularly important motivating factor in women. Compared to men, women practising skydiving are characterised by a greater inclination to seek sensations and new experiences by engaging in activities that provide intense sensory sensation. The direction of gender differences in skydivers is, therefore, opposite to the direction in the general population. The significance of this factor was also confirmed by the distribution of sten scores: almost 70% of the women in the study received high scores. These results are consistent with the findings of Hromatko and Butković [22], who found intergender differences in sensation seeking. Men were characterised by higher scores in disinhibition, while women were characterised by higher scores in experience seeking. In her examination of paragliders, skydivers, scuba divers, and mountaineers, Blenner found that, compared to young men, young women (under the age of 30) were characterised by higher scores in three dimensions of sensation seeking (all except disinhibition) [23].

What distinguishes female skydivers is the very strong need for experience of a mental nature and, therefore, for emotions as well. However, data on intergender differences in sensation seeking in persons who participate in high-risk sports are still divergent. A study of extreme kayakers and mountaineers did not find any differences between women and men with regard to the need for stimulation [24, 25, 26].

According to Woodman et al., the strong emotions experienced during a jump may be an effective means to regulate emotions in people with alexithymia [27]. Alexithymia is described as the inability to understand or identify emotions and to name and express them, which leads to a lack of discharge of tension and anxiety [28]. Research has shown that skydivers with alexithymia, women in particular, deliberately become involved in situations connected with strong arousal and even fear [29, 30]. This is because they lose the ability to feel pleasure in any other way than through such intense, sometimes negative feelings.

The dimension of boredom susceptibility, which manifests itself as an aversion to performing monotonous activities and responding to them with restlessness and impatience, may be another potentially important factor. This dimension seems to play a minor role in secondary selection among men: there were no differences in this dimension depending on the level of expertise among the male subjects in the study. In women, on the other hand, this dimension was a factor in primary selection. In the group of novices, women reached the same level as men in terms of boredom susceptibility (which did not happen in the general population). What is more, women obtained significantly higher scores. This variable is also likely to be a factor in secondary selection in women, but working in the opposite direction than expected: women who discontinue skydiving have the highest levels of boredom susceptibility. In this respect, female novices were characterised by higher scores than expert female skydivers. In the group of expert skydivers, intergender differences were not statistically significant. Therefore, this component of the need for sensation seems to be an important factor in primary and secondary selection only in women.

It may be assumed that skydiving attracts people seeking strong sensations and intense emotions. However, it appears that in women the trait of boredom susceptibility in its extreme intensity may interfere to some extent with the aspects of skydiving that are associated with thoroughness, conscientiousness, and psychological resistance. People with high scores in BS quickly reach a state of impatience when they are forced to perform routine, repetitive tasks that are part of skydiving training. After the first stage of fascination, during which many elements are novel, such persons may discontinue skydiving and look for new sources of stimulation. Women susceptible to boredom to a degree similar to that in men (and higher than that in average women) are able to satisfy their need for stimulation in regular skydiving.

In conclusion, the significance of sensation seeking in primary and secondary selection in skydiving differs depending on the dimension of this trait and gender. The variables connected with this trait act as primary selection factors in both genders, but their importance is greater among women. Susceptibility to boredom is probably a significant factor in secondary selection in women, though in our study it was found to work in the opposite direction to the one postulated by Breivik [3].

It should be mentioned, however, that the present study has some limitations. One of them is a relatively small sample size, especially when it comes to women. Men dominate among skydivers in Poland, so the proportion of men and women in the study reflected their proportion in the population. The second limitation of the study is a certain arbitrariness of classifying participants into the group of expert skydivers. In the study, persons who had completed at least 100 times jumps were considered expert skydivers. Nowadays, it takes much less time to make 100 jumps than before. These criteria could be changed: for example, those who have jumped more than 500 times could be considered experts. It should also be pointed out that the conclusions about the importance of sensation seeking as a motivating factor were drawn somewhat indirectly through comparing the scores of skydivers to population norms, as well as through comparing novices to experts, but a precise determination of their motivating role is possible only in longitudinal studies.

The importance of sensation seeking as a motivating factor proved to vary depending on gender and the component of the trait. This suggests that further analyses should be conducted separately for each component. It would be interesting to determine the significance of the components of sensation seeking



in practising other high-risk sports. In particular, monitoring them over several years would allow for an effective assessment of the factors influencing the decision to undertake a sport and continue or discontinue it. Expanding research beyond investigating the need for sensation seems worthwhile. Recent studies by Barlow et al. suggest that different motives (the sensations of the activity, emotion regulation, agency functions, etc.) may be significant in various disciplines, such as skydiving, mountaineering, and ocean rowing [31, 32].

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