

Article

Benefits of Interoceptive Awareness: A Correlational Study of the Distinct Sport Education Program among Slovak University Students

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Abstract: This study aims to determine the formation of cognitive abilities and self-assessment among students of the special physical training in security forces program. A total of 96 students aged 18 to 24 years completed 12 close-ended questions, i.e., 6 knowledge awareness (KA) and 6 ideomotor awareness questions (IA). The 13th question was aimed at self-assessment of their own answers. Based on the Dunning–Kruger effect, comparing all positive answers to KA and IA questions with the self-assessment answer showed that 51% of first-year students provided positive answers with a 50% self-assessment rate, indicating a balanced self-assessment. The percentage of positive answers for the second-year students totaled 51%, with a 70% self-assessment rate, indicating overassessment. The percentage of positive answers totaled 82% for the third-year students, with a 62% self-assessment rate, indicating underassessment. To help students to become proficient requires balancing theory and experience, classroom and practice, where they incorporate a “student-as-instructor” modality to the entire curriculum, not only to the limited selected courses of the special forces training. Using the active learning technique helps students to gain exposure to a stimulating and interactive environment. We stress a teaching modality that includes learning by doing and having the student act as a teacher. In this role, participants maximize their learning through interoceptive awareness, feeling, and applying course material in a more comprehensively factual setting.

Keywords: undergraduates; special instruction; enhancement; interoception; learning; Dunning–Kruger effect



Citation: Uher, I.; Pivovarník, J.; Majherová, M.; Chovanová, E. Benefits of Interoceptive Awareness: A Correlational Study of the Distinct Sport Education Program among Slovak University Students. *Sustainability* **2022**, *14*, 1607. <https://doi.org/10.3390/su14031607>

Academic Editor: Jordi Colomer Feliu

Received: 21 November 2021

Accepted: 26 January 2022

Published: 29 January 2022

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1. Introduction

Overestimating and underestimating one's abilities in security forces may negatively affect practical activities, which rely on perceiving one's abilities under conditions of objective reality. Without adequate preparation, knowledge, and training, individuals who enter a profession may fail to carry out their competencies. Training should form a coherent whole consisting of theory and practice during the early preparatory phase within school physical education. The practice has shown that physically unfit individuals often cannot assess their performance levels [1], which may be associated with a lack of knowledge and experience, preventing realistic self-evaluations [2]. Specific reality may affect the prediction, planning, and assessment of the critical situations that members of security forces experience. The incorrect assessment of a situation and imperfect, inadequate, and strategic thinking may subsequently have negative consequences. The effect of a potential failure constitutes both theoretical and practical competencies. Experience, empathy, suppressed emotionality, critical thinking, practical motor skills using the moment of empathy, and the perception of actual presence, own body and mind may substantially affect an individual's

critical performance in stressful situations brought about by service in armed and security forces [3].

Previous studies [4–6] have shown that less educated persons make incorrect decisions more frequently, unaware of doing so. Incompetent individuals overestimate their ability, whereas their competent peers tend to underestimate their ability. In addition, competent individuals can adapt and recognize their own underestimation. On the contrary, incompetent individuals do not alter their own assessment in confrontation with reality, demonstrating a limited ability to distinguish superior from inferior performance on the part of others [4,7–9]. According to the realistic accuracy model (RAM), accuracy in judgment is achieved when relevant behavioral information is available to and detected by a judge who then utilizes that information correctly, and when are personality judgments accurate? RAM proponents identify four principal moderators of accurate personality judgment, i.e., properties of the target of judgment, the trait that is judged, the information upon which the judgment is based, and the individual making the judgment [10].

A study by Tajeiro et al. [11] showed that students' self-assigned marks tended to be higher than marks given by professors. In contrast, studies of formative self-assessment suggest that, when the act of self-assessment is given a learning-oriented purpose, students' self-assessments are relatively consistent with those of external evaluators [12].

Nevertheless, any definition of self-assessment must acknowledge and distinguish between formative and summative forms of assessment, should be guided by evaluative criteria. Admiraal et al. [13] claim that summative self-assessment tends to be inconsistent with external judgements, with males tending to overrate and females to underrate their performance [14]. The review of Brown and Harris [15] states that correlations between student self-rating and other measures tended to be weakly-to-strongly positive. Studies of formative self-assessment also suggest that consistency increases when it is taught and supported in many of the ways that any other skill are taught and supported [16,17]. The results from the studies conducted in higher education settings suggests that college and university students understood the function of self-assessment [18] and generally found it to be useful for guiding evaluation and revision, understanding how to take responsibility for learning [19], prompting them to think more critically and extensively [20], incorporating newfound skills, and fostering self-regulated learning by guiding them to set goals, plan, self-monitor and reflect [21]. It appears that formative forms of self-assessment can promote knowledge and skill development [22]. The research suggest that formative assessment has a potential influence on self-regulated learning, i.e., when the learner sets goals and then monitors and manages the subject's thoughts, feelings, and actions to reach those goals [23,24]. Thus, self-assessment epitomizes the act of monitoring one's processes to make adjustments that deepen learning and enhance performance. Self-regulated learning is a tool to evaluate the quality of one's work, measure performance with the stated goals and learning objective, identify the strengths and weaknesses in performance and implement revision accordingly.

Moreover, focusing attention on both external and internal experiences of our reality plays a fundamental role in awareness and its interiorization. Insensitiveness to bodily indicators influences our emotions in its regulation and interpretation. The series of changes that our neural system perceives integrate and interpret beyond the exogenous environment, referring to interoception. Interoceptive awareness and sensitivity to somatic indicators may significantly influence our decision-making process that subsumes cognitive, affective, and motor learning. Understanding and accurately interpreting bodily signals may help us to better understand and regulate emotional and physical states, including cognitive functioning, enabling us to formulate our behavior. Although most bodily signals are processed subliminally, we are not aware of the autoregulatory processes of some activity, e.g., muscle tension and prolonged inconclusive thinking about a matter we can perceive. Storing and interpreting these sensations can play a significant role in interpreting phenomena. When conducting education and training programs for individuals in martial arts and security forces, it is critical to understand the aspect of practically perceiving

acquired knowledge and its concordance with practical application (feeling of conscious strategy and subconscious tactical actions). This study points to the correlation and integration of theoretical and practical variables, and their position in self-assessment and decision-making processes that can ultimately improve overall performance. Ideomotor awareness IA represents a psychological construct wherein a subject unconsciously makes physical activity (in our context), and he is aware of it. In comparison, KA indicates an individual's being informed and perceiving information around oneself. Both IA and KA represent an individual concept.

The main objective of the investigation is to obtain information about the differences in total scores for KA and IA questions by overall year of study, as well as variances in total scores for KA questions by year of study, variances in overall scores for IA questions by year of study, and the distinctions in total scores for self-assessment and DKE by year of study. Our results can potentially outline, ground and direct future research in teaching modalities and consider potential changes in preparation of students enrolling in the physical training in security forces. The challenge was to prepare a test with 12 questions, more specifically 6 fundamentally theoretical and the same number of practical questions related to marshal art and elementary physical education knowledge. The last (13) question aimed to self-evaluate student responses to the questionnaire. The test was applied via Microsoft Teams. We assumed that year 1 students would undervalue, year 2 students would overvalue, and year 3 students would objectively evaluate their performance.

2. Materials and Methods

2.1. Study Participants

A total of 96 students, 65 males and 31 females aged 18–24 were enrolled in the study: 1 Y of study—39 males and 17 females; 2 Y—15 males and 8 females; 3 Y—10 males and 6 females. Those enrolled in the three-year bachelor's degree program of special physical training in security forces participated in this study from September 2020 to June 2021. The testing was not explicitly oriented towards the individual year of study, but more to the content of overall teaching modality and its interpretation, which account for not applying detailed descriptive statistics of the participants (more comprehensive view). Ninety-five percent of all students enrolled in the study program completed the testing (one student did not completed the questionnaire). Because the bachelor's degree study program existed for three years only, the number of students signed up for the particular years of study was uneven. The questionnaire was completed during distance learning due to the COVID-19 pandemic.

2.2. Theoretical and Practical Knowledge

We recognize that consciousness and cognition partially overlap (explicit vs. implicit memory). We emphasize a conscious experience (conscious cognition that equates to awareness) of knowing, feeling, alertness, etc. While cognition is related more to the part of mental functions concerned with logic and experience things that we can consciously recall, the affective memory involves more perceptual and emotional unconscious memory that attracted our attention. Hence, the questions in our questionnaire were formulated and directed so that the student may respond cognitively to questions of a cognitive nature (theoretical questions), which they acquired through theoretical training in their class, or perhaps through their previous academic study or explanation. Correspondingly, practical questions were included that might evoke the visualization and ideomotor experience associated with the training process in the dojo (training place). That means not merely memorization of the concept, but equally an association with a specific physical experience through the feeling. The time limit for completing the test was 10 min. Students completed the test through the Microsoft Forms electronic application, which provided automatic test evaluation. The questions contained 4 items; the maximum number of points scored was 100 (100%).

2.3. Dunning–Kruger Effect

The 12 questions were split into 6 inquiries related to the basic theoretical knowledge from physical education and 6 practical questions on a martial art, more specifically karate (students participated in karate lessons from the first year of study). The last 13th question was aimed at evaluating the students' own questionnaire. This question acted as the fundament for our research. We were interested more in how students interpret their questionnaire than the correctness of their answers. The Dunning–Kruger effect was used as a hypothetical cognitive bias that causes people to overestimate their knowledge or ability. Questionnaire completion was voluntary. Students were informed that it would not be graded. Its focus was solely on the evaluation of their (theoretical and practical) knowledge, understanding, and perception. It was stated that, if appropriate, the result would be used to improve teaching modality in relevant subjects. A questionnaire was added to the annex.

2.4. Outcome Variables

The percentage of correct answers was the outcome variable, and 100% was the maximum score. Students answered six knowledge awareness (KA) and six ideomotor awareness (IA) questions. By completing the 13th question, students assessed their answers. Knowledge and ideomotor awareness levels were compared by the year of study. Knowledge and ideomotor awareness scores were compared with the Dunning–Kruger effect (DKE).

2.5. Data Analysis

The variables studied did not have a normal distribution. Therefore, non-parametric methods were used. The Kruskal–Wallis one-way analysis of variance was used to determine if there were statistically significant differences between the groups of an independent variable. Statistica 12 program software was employed to perform data management and analysis. Correlation coefficients for the collected data were computed as a part of the correlation analysis. The level of significance $p < 0.05$ was considered statistically significant.

3. Results

The descriptive statistics for the KA and IA questions are presented in Table 1. According to the results, the knowledge level increased with the year of study. The percentage differences between first- and second-year students was 5.5% and 25.5% between second- and third-year students.

Table 1. Total point scores for KA and IA questions.

Year of Study	Total M	N	Total SD	Total 25th Quantile	Total Mdn	Total 75th Quantile
1st year	50.63	56	13.69	42.00	51.50	60.00
2nd year	56.30	23	10.26	48.00	57.00	64.00
3rd year	76.19	16	12.17	66.00	82.50	83.00
Total	56.30	95	15.63	46.00	56.00	66.00

Table 2 shows differences in KA and IA levels between first- and third-year students and between second- and third-year students. However, the differences in KA and IA levels between first- and second-year students were statistically insignificant.

The total score consisted of the KA and IA questions. The analysis showed that KA contributes the most to the total variable, demonstrated by the significant correlations for the particular year of study (1st year: 0.841; 2nd year: 0.696; and 3rd year: 0.761). The variables overall and KA show the same courses. The difference between first- and second-year students was 2% and 18% between first- and third years students (Tables 3 and 4). First-year students demonstrated higher KA levels than second-year students; however,

the differences in KA were statistically insignificant. There was a significant difference in KA between first- and third-year students.

Table 2. Differences in total scores for KA and IA questions by year of study.

Year of Study	r1 R:38.634	r2 R:48.587	r3 R:79.938
1st year		0.43	0.01 *
2nd year	0.43		0.01 *
3rd year	0.01 *	0.01 *	

* $p < 0.05$ level of significance.

Table 3. Total point scores for the KA questions.

Year of Study	M	N	SD	25th Quantile	Mdn	75th Quantile
1st year	32.18	56.00	11.79	20.00	31.00	40.00
2nd year	29.48	23.00	9.28	20.00	29.00	38.00
3rd year	46.62	16.00	7.99	40.00	49.00	49.00
Total	33.96	95.00	12.07	29.00	38.00	40.00

Table 4. Differences in total scores for KA questions by year of study.

Year of Study	r1 R:44.473	r2 R:36.457	r3 R:76.938
1st year		0.72	0.01 *
2nd year	0.72		0.01 *
3rd year	0.01 *	0.01 *	

* $p < 0.05$ level of significance.

The number of correct answers to IA questions provided by second- and third-year students was similar, with third-year students showing higher IA levels. However, there were no significant differences. First-year students demonstrated the lowest IA levels, which were significantly lower than those observed for second- and third-year students. The results showed moderate positive correlations between total point score and IA levels for first- and second-year students (0.509 and 0.495, respectively) and strong correlations (0.761) for third-year students (Tables 5 and 6).

Table 5. Total point scores for IA questions.

Year of Study	M Total	N	SD Total	Total 25th Quantile	Mdn Total	Total 75th Quantile
1st year	18.45	56	7.42	42	19.50	26.00
2nd year	26.83	23	7.67	48	29.00	34.00
3rd year	29.56	16	7.99	66	31.50	34.00
Total	22.35	95	8.89	46	21.00	29.00

Table 6. Differences in total scores for IA questions by year of study.

Year of Study	r1 R:35.661	r2 R:63.543	r3 R:68.844
1st year		0.01 *	0.01 *
2nd year	0.01 *		1.00
3rd year	0.01 *	1.00	

* $p < 0.05$ level of significance.

The analysis of self-assessment and comparison with DKE showed that first-year students underestimated their performance. Second- and third-year students provided

similar self-assessments. However, the comparison of the mean scores showed a more considerable difference between first- and second-year students, with third-year students achieving lower scores.

There was a significant difference of 20% between first- and second-year students, and the difference between first- and third-year students was 12.5%.

The ability to self-assess plays a crucial role in the security training and strategic and tactical training of future expert instructors. Figure 1 shows that practical actions conducted within training were dichotomously correlated with DKE. Similarly, theoretical knowledge correlated with the total test score. First-year students overestimated their performance, and their theoretical knowledge shows neutral levels, failing to translate their theoretical and practical knowledge into a coherent whole. Second-year students received a high number of theoretical and practical classes, which may have induced higher self-awareness levels with a limited transfer of theoretical knowledge into practice. Third-year students sufficiently use the knowledge gained during their study, managing to practically use their knowledge. The practical experience of students with leading and teaching first- and second-year students plays a critical role in the training process, i.e., “student as instructor”. Third-year students could assess their abilities more realistically, managing to empathize with others, realize their experience, and state of mind through the medium of interoception, which allowed students to assume the role of a student instructor. By realistically and currently verifying their abilities, students are able to know both their positives and their limitations. The ability to lead the training process was assumed to be a factor underlying differences between years of study. Compared with the first- and second-year students, third-year students were not affected by DKE, underestimating their performances in contrast to reality.

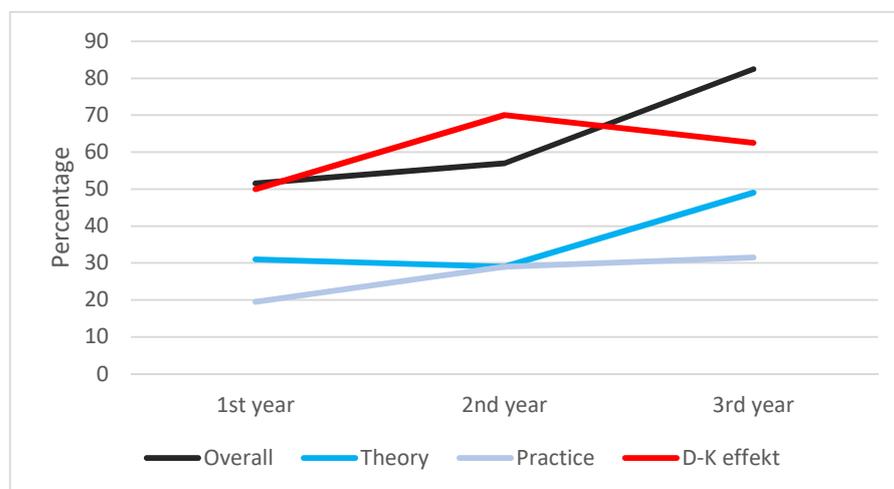


Figure 1. Interrelation pattern between (KA, IA) together and (KA) separately illustrated lower and DKE and ideomotor questions (IA) higher.

The findings of this study show the benefits of practical training, especially in the form of instructor practice, and its effects on interoceptive perception, conscious and subconscious feelings of body awareness, which may significantly may or may have modified students’ cognitive functions.

Legend to Figure 1: On the horizontal axis, years 1 Y, 2 Y, and 3 Y are marked, with their achieved results in % of the median on the vertical axis. The upper curve is the line between the three points obtained in the DKE effect estimate (solid thick line). The second curve is the line between the overall KA + IA test results (long dashed line). The third curve is the line between KA’s theoretical questions (dotted line) and the fourth lowest is the results line for practical questions IA (short dashed line). As we can see, the concave shape and similarity of the course reach the DKE effect (see Tables 7 and 8) and the practical result of the IA test (see Table 5) (solid upper line and lower short dashed). The convex shape

and similarity of the course reach the overall result, Overall KA + IA (see Table 1), and the result of the test for theoretical questions KA (see Table 3) (second long dashed line and dotted line).

Table 7. Self-assessment and DKE for particular years of study.

Year of Study	<i>M</i> Total	<i>N</i>	<i>SD</i> Total	Total 25th Quantile	<i>Mdn</i> Total	Total 75th Quantile
1st year	53.63	56	15.30	42.00	50.00	64.00
2nd year	66.96	23	11.55	60.00	70.00	75.00
3rd year	66.19	16	21.89	50.00	62.50	87.50
Total	58.97	95	16.92	50.00	60.00	70.00

Table 8. Differences in total scores for self-assessment and DKE by year of study.

Year of Study	<i>r</i> ₁ R:39.000	<i>r</i> ₂ R:62.457	<i>r</i> ₃ R:58.719
1st year		0.01 *	0.03 *
2nd year	0.01 *		1.00
3rd year	0.03 *	1.00	

* $p < 0.05$ level of significance.

4. Discussion

The aim of the investigation was to obtain knowledge about the distinctions in total and individual scores for KA and IA questions in each year of study. Additionally, we were especially interested in being able to understand students' self-assessment based on their training during their study and compare them with each other using the DKE model.

The evaluation of all answers to KA and IA questions showed an increasing rate, showing an improved percentage of 25.5% between second- and third-year students. This finding may be attributed to several factors, such as new environment, expectations, enthusiasm, and fulfillment of own ambitions, and the median for correct answers was 56%. For the knowledge awareness levels, the percentages of correct answers for first-, second-, and third-year students were 31%, 29%, and 49%, respectively. The percentage rate increased by 20% between the second and third year of study. This finding may have been caused by the higher self-confidence levels of students, decreased interest in developing cognitive competencies, and stereotypes acquired during the second year of study. The percentage median for the knowledge awareness was 38%, indicating a decline compared with the 56% rate of correct answers to KA and IA questions.

The percentages of correct answers to IA questions for first-, second-, and third-year students were 19.5%, 29%, and 31.5%, respectively. The evaluation of answers to KA and IA questions for the years of study showed that first-year students demonstrated higher KA levels by 11.5% in the first year of study and 17.5% in the third year of study. The percentage median for IA was 21% of correct answers, representing the lowest percentage score compared with the total KA and IA and KA. This finding shows that students lack practical competencies, although second-year students took 62 martial arts classes per semester compared with 21 classes in the first year and 28 classes in the third year of study. Although the number of practical classes was three times higher than in the first year and two times higher than in the third year of study, students did not demonstrate significantly different IA levels.

When evaluating self-assessment, i.e., the process of formative assessment, during which individuals evaluate the quality of their work and knowledge, identify their strengths and weaknesses, and act accordingly, we focused on the overestimation hypothesis, which could identify the levels of cognitive, affective, and motor learning, self-reflection, and self-management. The self-assessment made by the first-year students showed that students did not overestimate their performance because the ratio of the actual percentage score

and the estimated score was 51.5% to 50%. Compared with the actual percentage of correct answers, the second-year students overestimated their performances by 13% (57% to 70%). On the contrary, the third-year students underestimated their performances by 20% (82.5% to 62.5%). The difference between the medians for actual answers to KA and IA questions and self-assessment was 4% (56% vs. 60%), showing moderate overestimation.

The KA levels demonstrated by students prevailed over the ideomotor awareness levels. Despite more theoretical and practical martial arts classes being taken during the second year of study, the third-year students achieved relatively the best results. The length of study may represent a contributing factor underlying a particular reality, which corresponds with the KA answers, but not the IA answers. For the IA levels, the median of correct answers for all years of study was 21%.

When finding answers to a particular reality, practical classes based on active learning—student-as-a teacher technique—taken by the third-year students was considered. The mode of practicing as instructors or teachers may have mediated the students' awareness of their own competences, abilities, limitations, previous faults, and abilities of others [25]. An individual feels more confident when deciding quickly.

In the context of analyzing and interpreting our findings, it is essential to consider students' sensations from inside the body, the processes that the organism perceives, interprets, integrates, and regulates through the endocrine system. The processes that the nervous system perceives and integrates above the exogenous environment levels is referred to as interoception [26]. Some authors [27–29] consider interoception as the fundamental mechanism of mental and physical health. Understanding and correct interpretation of organism's signals may help us to find, better understand, and regulate emotional and physical states, including cognitive functions. Although most signals are processed subconsciously, we are not aware of autoregulatory processes. However, we can or are able to perceive some of these signals and feelings (somatic markers), such as muscle tension or heartbeat. The way of storing and interpreting feelings, if any, will be relevant for interpreting phenomena. These experienced feelings enable us to formulate or behavior. People exhibit a variety of reactions, motivations, which are, to a certain degree, associated with the ability to recognize and regulate one's own emotions [30]. This emotional sensitiveness, deteriorated ability to perceive our own body signals and interpret them correctly may significantly affect our cognition and overall performance [31]. This process of focusing attention on both external and internal experience, i.e., students' experience in our reality, which takes place in present reality, play a crucial role in the process of awareness and its interiorization. According to multiple authors [32,33], insensitiveness to somatic markers influences our emotional well-being, capacity to regulate our emotions, interpretation of reality, self-esteem, self-concept, self-efficacy, self-assessment, and cognition development [34,35]. Through their practical experience with practicing as teachers, students could correctly identify, perceive, and continually modify these markers with the assistance of their teachers.

Our finding presents our position and perspective on the topic. It also corresponds with the other researchers' results and conclusions [36–41] that analyze interoceptive awareness and its benefits that may include increased focus, attention, self-control, classroom participation, and improved academic performance. The authors of [1] summarize various fundamental theories on how mindfulness shapes attention regulation, body awareness, emotional regulation, and change in perspective on the self. All the effects mentioned above were linked to the interoceptive framework as the neural correlates of those functions. The authors of [42,43] argue that interoception is the foundation to mindfulness and maybe the primary mechanism by which one benefits from the practice. Furthermore, [44] claims that interoception plays a central role in maintaining self-regulation. We know that interoceptive awareness and mindfulness are associated, but distinct, constructs in mind–body interactions. Mindfulness often distinguishes between attention directed to interoceptive sensations, exteroceptive stimuli, or conscious thoughts. It may be significant as several recent studies highlight those different types of engagement that elicit different neural

pathways [45,46]. Accordingly, [32] argues that consciousness of the “self” depends on the awareness of the body. The nature of attention to our body changes the same experience and perception that ultimately can change us. The author further claims that there are several ways to attend to the body, and each style can reveal different insights and understandings.

Furthermore, Ref. [47] asserts that attending to the body anchors the mind in the present and away from rumination. Furthermore, interoception seems to require the interplay between perceptual body states and cognitive appraisal of those body states. In accordance [48] postulates that focused attention on internal signals is necessary to develop interoceptive awareness and recognize emotions. Hence, the body and interoceptive awareness inform and shape all our subjective experiences. Research [49,50] points out that the benefits of being open, accepting, and non-judgmentally noticing various sensations without being carried away can prove helpful, allowing the individual to observe or witness them. The authors of [51] claim that interoceptive learning appears to be a complex process that includes updating and integrating information from ongoing body signals with previous body signals and mental processes. Over time, these connections are strengthened. However, some authors point to some conceptual and methodological challenges, calling for the need for a contextualized mindfulness framework [52,53]. Moreover, mindfulness training programs do not always reveal improvement on the mindfulness scale [54], and when scores differ from controls, the effect sizes can be modest or even weak [55].

Notwithstanding, one can argue that our results can be over-interpreted. Our correlation measures were incorrectly interpreted, suggesting causation rather than association. Nonetheless, our results’ consistency with other research is suggestive, rather than conclusive. We can conclude that the interoceptive model can be applicable across various settings, contexts, groups, and conditions empirically supported by scientific evidence. Our results suggest that interoceptive awareness and specific mindfulness training may enhance attention-related behavior—responses by improving the functioning of subcomponents of attention. Even though our research seems overly complex and other studies have not replicated our results, evidence from authoritative sources demonstrates the relevance and application of the concept of interoceptive awareness to global education.

To conclude, we can state that, even though the information is invaluable, we should not rely on it solely. The comparison, reassessment, variability of perspectives helps us to understand a specific situation through which we can discover ways and patterns of thinking (comparison) that will support us to better understand where our consciousness is focused on the problem. Furthermore, seeing things as they unfold without the burden of the intellect (discriminations, patterns, goals, etc.) creates conditions to realize an actuality that reduces internal tension where the sense of “present moment” reflects an interest in events and processes, not answers that often distort reality. Logical reasoning, the desire to apply the principles of logic that help knowledge, hampers knowledge here. Here, we experience self-awareness, the feeling of the moment, current, experience a conscious presence area of the brainpower that is not controlled by experienced patterns. Moreover, the knowledge we have gained through experience is non-transferable, i.e., the experience gained cannot be understood by an individual who has not lived through the experience. We place more emphasis on cognition than experience, where experience, awareness of our own fault, and mistakes allow us to better understand and overcome unawareness. Additionally, therefore, it is essential to learn to work with areas of the mind that are not controlled by established patterns. Additionally, from our observation, it is through the implementation of practical training in different modalities that we can create the conditions for self-awareness, a feeling of a conscious presence that helps us to overcome our unawareness. Our results showed that students progressively gained both theoretical and practical experience and skills, even though first- and second-year students could not translate their knowledge into practical skills as was demonstrated by third-year students.

5. Conclusions

Gaining reliable scientific knowledge requires time. If we want to form correct judgments and draw consistent conclusions, we must not come to hasty and contradictory conclusions, especially regarding the complex phenomena underlying human behavior. It is only through the analysis and assessment of phenomena already discovered by science and their formulation that the results of research into mental processes may reveal stability within long-term observation. This study points to the correlation and integration of theoretical and practical variables and their position in self-assessment and decision-making processes.

We accentuate the benefits of interoceptive awareness, sensitiveness to somatic markers, that may significantly substitute an individual's decision-making process, including cognitive, affective, and motor learning.

Our study exhibits some limitations within which our findings need to be interpreted with caution. The research was carried out in Slovakia, i.e., one country, and in a very specific undergraduate program. The research presented in this paper was limited by the measurements used (school environments are composed of numerous seemingly uncorrelated factors that can influence student outcomes). Additionally, the chosen statistical method can be the source of the limitations that emerged during the interpretation of the research and can consequently place constraints on the ability to scrupulously generalize our results. Moreover, our study did not examine the somatic characteristics that may have influenced our results and conclusions. The results of our investigation may not be entirely generalizable as the sample size was within reason restricted. However, we highlight the significant correlations between theoretical knowledge and its transfer into practical skills over time in a particular setting.

At the very end, we can express that testing this hypothesis will require further research and observation to understand and discover complex interactive relationships between perception, learning, awareness of logical thinking when coming to correct judgments and conclusions. Regarding the education and training of individuals in martial arts and security forces, it is essential to perceive the feeling of conscious strategy, but also of subconscious tactical actions. Direct tactical actions are initiated consciously, but a particular present reality relies on acquired patterns within direct practical activities. When conducting teaching programs for specialists, it is critical to understand the aspect of practically perceiving acquired knowledge and their concordance with practical application. We can conclude that the findings may be synthesized, incorporated into practice, programs, creating, monitoring, cognitive, affective, and motor learning within the special training of security forces and other domains of teacher practice.

Author Contributions: Study concept and design: J.P., I.U. and E.C.; methodology: I.U., J.P., M.M. and E.C.; formal analysis: I.U. and M.M.; resources: J.P., I.U., M.M. and E.C.; writing—original draft preparation: I.U. and J.P.; writing review and editing: I.U., J.P. and M.M. All authors have read and agreed to the published version of the manuscript.

Funding: This study was supported by project VEGA 1/0120/19 entitled Movement correction of the problematic behavior of students from the standard population and students with special educational needs educated under the conditions of integration.

Institutional Review Board Statement: The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Institutional Review Board (or Ethics Committee) of the University of Presov, in Presov, Slovakia (Approval No. 3/2021).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The authors have full access to all specific material used in this paper and take responsibility for the use and accuracy of the information provided.

Conflicts of Interest: The authors declare that there are no conflict of interest regarding the publication of this paper.

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