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RESEARCH ARTICLE

Comparison of flow experiencing in elite tennis players and certified project managers: A Czechoslovak study

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ABSTRACT

The presented research article is focused on the issue of flow experiencing in elite tennis players and certified project managers. The primary goal of the research is to empirically identify whether there is a significant variance in flow experiencing between elite tennis players and certified project managers. To fulfill the goal of the research, a questionnaire survey is used among elite tennis players representing the Czech and Slovak Republics and certified project managers (IPMA, PMI, PRINCE2 certification). The research results showed that there is no significant variance between elite tennis players and certified project managers flow experiencing. This finding is important for the development of managerial skills of project managers who are trying to find the most effective way of using the flow phenomenon to achieve better work performance. After an overall evaluation of both theoretical and our empirical findings, we conclude that phenomenon flow is a dynamic and lively theoretical concept with the potential for further development in areas that are not currently the subject of further research into management use.

Keywords: flow; component; elite tennis player; certified project manager; Czech Republic; Slovakia

1. Introduction

The flow phenomenon is an optimal state of consciousness in which we feel that we are the best and the most efficient, we perform at the highest level. "Activity during flow is spontaneous to automatic, the experiencing person either does not perceive time at all or, on the contrary, has more precise time control. Control over actions is fully preserved and there is a feeling of increased control of events that does not require effort, will or decision-making. This very pleasant state is associated with light excitement and a strong sense of equanimity"[1]. The American psychologist of Hungarian origin Mihaly Csikszentmihalyi is considered to be the author of the term flow. He defined the term flow in 1991 in the context of his long-term research focused on happiness and experience.

He published his findings in many studies, especially in Csikszentmihalyi[1], Csikszentmihalyi and Hunter[2], Csikszentmihalyi[3], Csikszentmihalyi[4], Csikszentmihalyi and Csikszentmihalyi[5], or

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Csikszentmihalyi and LeFevre[6].

However, the concept of flow or optimal experience is already recorded in the 60s of the last century by the humanistically oriented psychologist A. H. Maslow[7]. Currently, the flow phenomenon is used in various fields, including sports[8–12], art[13,14], business[15–18] or education[19–21].

Given the potential benefits of flow, it is important to be able to accurately diagnose and measure it. Despite the fact that tools for measuring flow are still increasing, it is still difficult to find data. The biggest problem is "the very nature of the flow phenomenon, which is difficult to grasp and has a subjective nature"[22]. The flow is primarily diagnosed through self-assessment measurements, as it is a subjective experience that cannot be directly observed[23]. The most frequently used tool is the "Flow State Scale"[24], the validity of which was clearly demonstrated by Jackson et al.[25].

The main goal of the presented research article is to compare the flow experiencing among Czech and Slovak elite tennis players and certified project managers. We will observe the variances in the particular flow components, which define Csikszentmihalyi[4], Rieber et al.[26], Asakawa[27], Bay[28], Colman[29], Macková[30], Ghani[31], Bederson[32], Dormashev and Osin[33], Novak and Hoffman[34], Ghani et al.[35], Ellis et al.[36], Dietrich and Stoll[37] and Skadberg and Kimmel[38]. The reason for comparing the flow experiencing in elite tennis players and project managers is to confirm the assumption that elite tennis players can become elite project managers, since the personality characteristics of elite tennis players basically correlate with the personality characteristics of project managers. We confirmed this in the framework of the research by Bočková and Čepelová[39], while the comparison of flow experiencing further deepens our research solved in the project IGA VŠDTI No. 005DTI/2021.

2. Materials and methods

2.1. Research questions and hypothesis

The following research question is formulated: RQ1: Are there significant variances in flow experiencing in elite tennis players and certified project managers?

Hypothesis follows from the research question: H1: Elite tennis players experience a significantly higher level of flow than certified project managers.

Elite tennis players move in an environment that is very dynamic, constantly changing and requires quick reactions and adaptation to changes. This fact often leads to increased focus and concentration, which are a key to flow experiencing. In addition, tennis players often work in interactions (trainer, conditioning coach, coach, doubles partner) and must take into account their dynamics, which can increase the level of focus even more and contribute to flow experiencing. It is precisely on the basis of these stimuli, which are also partially elaborated in the researches of Jackson[8] or Liu and Tenenbaum[40], that we expect significant variances in flow experiencing between elite tennis players and certified project managers.

2.2. Ethical research aspects

Quantitative methods of data collection using a questionnaire survey are used in this research. This is anonymous, participation in filling it out is voluntary. Personal data obtained for the purpose of sending research outputs are processed on the basis of GDPR and are not used for any other purposes.

2.3. Data collection

The data for subsequent analysis in the context of fulfilling the goal of the research was obtained using a questionnaire survey. The questionnaire containing 42 questions (36 scale-type questions aimed at identifying

the level of flow experiencing, 3 dividing questions, 3 supplementary questions) was created in the www.survio.com environment. It is a self-constructed questionnaire, but its content was inspired by the standardized questionnaires Flow State Scale (FSS) described in Jacskson and Marsch[24], Experience Sampling Method (ESM) described in Csikszentmihalyi and Larson[41], Flow Short Scale (FSS-2) described by Rheinberg et al.[42] and the Flow Proneness Scale (FPS), which is covered in detail by Elnes and Sigmundsson[43]. However, the questions had to be corrected, as the questionnaire was created in the Czech language, and minor inconsistencies and overlapping questions had to be removed when correcting for the analysed states and samples.

The questionnaire was aimed at monitoring two specific areas.

The first area is the monitoring of the flow experiencing in relation to a selected sample of respondents. In this context, we divided the flow into several components. The division of flow into components according to Jackson and Csikszentmihalyi[9] was primarily used as follows:

1) Autotelic personality,
2) Clear goals,
3) Control over the situation,
4) Unequivocal feedback,
5) Immersion in the activity,
6) Focusing on the current experience,
7) Transformation of time,
8) Loss of self-awareness,
9) Balance between the challenge and the individual's abilities.

The second area is the verification monitoring of the flow model representation (the channel model described in Engeser[44], the classic model defined in Csikszentmihalyi[45] and Moneta[46], no model). This part of the questionnaire consists of two statements, the goal of which is to verify the appropriateness of using the flow model. The purpose of these questions is to determine whether the difficulty of the task is important for flow experiencing or whether the individual's reasonable ability is sufficient. Respondents answered yes/no to these statements.

The link to the questionnaire was sent to a preselected sample of respondents via social networks.

The questionnaire was created in a standardized format to enable relevant data analysis. Scale-type questions were rated by respondents on a scale of 1-5 (1 = never, 2 = rarely, 3 = occasionally, 4 = often, 5 = always), with the lowest score corresponding to the minimal occurrence of the activity or situation mentioned in the question (never) and the maximum score 5 corresponds to the most frequent occurrence (always). The questions were worded so that a higher score reflected a positive state.

By using the online version of the questionnaire, it was possible to collect a large set of data in a very short time, which would not have been possible in the case of a personal or written contact. However, online surveys also entail risks that had to be taken into account before the actual publication of the questionnaire. The main risk lies in the incorrect understanding of the question by the participants of the questionnaire survey, which can lead to incorrect interpretation, incorrect point evaluation and subsequent entry of an error into the analyzed pattern. Another risk is partial depersonalization, the result of which may be the creation of a large number of incomplete questionnaires that have no relevant value.

Participation in the questionnaire survey was voluntary and was not remunerated in any way, the questionnaire was anonymous. The time to fill out the questionnaire was set at 10 min. The participants of the questionnaire survey were offered the possibility of sending the results and feedback to an email address.

2.4. Research sample

We included in the analysis all completely completed questionnaires and questionnaires where only the maximum or minimum values were not filled. In total, data from 102 respondents were analyzed.

Out of 102 respondents, 52 of them (~51%) are elite tennis players of the Czech Republic and Slovakia included in the senior representative teams. Their list of names was obtained using contacts at the Czech Tennis Association and the Slovak Tennis Association, 50 (~49%) of the respondents are certified project managers who were contacted using the contact database at Business EDU, a.s., where these project managers completed their MBA studies program project management and planning during the years 2015–2023, they meet the condition of employment for the position of project manager and have one of the available certifications, i.e., IMPA, PMI or PRINCE2 certification.

The gender and age structure of the respondents were not considered relevant for the needs of the given research, and therefore these aspects were not investigated.

The representation of individual samples of respondents (elite tennis players vs. project managers) is almost equal, i.e., ideal for the needs of our research.

2.5. Data analysis

MS Excel was used to process the obtained data and their subsequent analysis.

The first step in the context of statistical data analysis was to determine the reliability of the dataset. For this, the Cronbach's alpha test was used, which expresses the degree of internal consistency of the items and thereby estimates the reliability of the entire test.

Furthermore, we identified variances between the analyzed samples of elite tennis players and project managers. In the case of the analysed dataset, it was not possible to assume a normal probability distribution, and therefore we decided to apply the non-parametric testing methods. Therefore, the Mann-Whitney U test was used, the goal of which is to verify the null hypothesis, which assumes that the effects of the parameter on both analysed samples are equivalent. With a large number of samples tested, the U value is approximately normally distributed.

The student's t-test was further used to achieve more accurate results when monitoring the effects in the particular analyzed samples. Specifically, it was a student's two-sample unpaired t-test. In practice, this test is used to monitor whether the measurement results in one sample differ significantly from the measurement results of the other sample. Before performing the T-test itself, a simple F-test must be performed to verify that the two random samples have the same variance.

In the next step, we focused on finding out how they are related to each other and whether particular flow components influence each other. The results of this analysis were evaluated on the basis of Spearman's correlation coefficient, which is a non-parametric method that uses the order of the values of the monitored variables in the calculation, does not require the normality of the data.

The last analyzed sample was the quality of flow experiencing and the representation of particular components. For this, student's one-sample t-test was used again.

2.6. Research limits

Of course, we can consider the size of the analyzed sample as the limits of the research, which is not large enough to generalize our statements to the entire population of elite tennis players and certified project managers. In addition, with a larger sample, qualitative-quantitative research could be used, thanks to which it would be possible to analyze and describe the characteristics of flow in more detail.

3. Results

3.1. Dataset reliability

The table below (**Table 1**) shows the values of the Cronbach's alpha coefficient for particular flow components.

Table 1. Dataset reliability.

Analysed components	Cronbach alfa
Autotelic personality	0.661
Clear goals	0.468
Control over the situation	0.682
Unequivocal feedback	0.678
Immersion in the activity	0.462
Focusing on the current experience	0.788
Transformation of time	0.851
Loss of self-awareness	0.552
Balance between the challenge and the individual's abilities	0.377

From the table above (**Table 1**), a considerable variance of Cronbach's alpha values is evident. The lowest value of the coefficient is achieved by the balance between the challenge and the individual's abilities component. In the case of this component, there was the lowest consistency of answers, which means that this flow component has a different effect on individual respondents.

Table 2. Dataset reliability: elite tennis players vs. project managers.

Analysed components	Cronbach's alfa	
	Elite tennis players	Project managers
Autotelic personality	0.589	0.713
Clear goals	0.423	0.489
Control over the situation	0.511	0.761
Unequivocal feedback	0.712	0.671
Immersion in the activity	0.451	0.672
Focusing on the current experience	0.648	0.778
Transformation of time	0.799	0.838
Loss of self-awareness	0.639	0.389
Balance between the challenge and the individual's abilities	0.479	0.315
Toher	0.891	0.879

It follows from the table (**Table 2**) that greater variance occurs among project managers, mostly in the Balance between the challenge and the individual's abilities component. There is a significant inconsistency in the Loss of self-awareness component, which may be related to the above inconsistency, because if an individual is unable to assess his abilities and limitations, he may choose challenges that are too challenging for him, or he may underestimate some challenges, which is resulting in inconsistency in his performance and decisions.

3.2. Relationship between particular flow components

Correlation analysis was used to identify the relationship between particular flow components using the Spearman's correlation coefficient. The probability value is set at a significance level of 95% (0.05). The results show the statistical significance of the particular components relationship tightness. The only component that shows inconsistency is the loss of self-awareness component, which does not reach statistical significance in most of the analyzed cases. The relationship between the transformation of time and control of the situation components when the correlation coefficient reaches the negative values does not reach statistically significant values at the selected level of significance.

3.3. The most frequently experienced flow components by elite tennis players

A student's t-test was used to identify the flow component with the most frequent occurrence. Based on this test, we sorted the particular components according to the occurrence of the average values achieved. The null hypothesis H0 was tested: the occurrence of particular flow components does not differ statistically significantly from the possible point average $\mu 0 = 12$. This value was determined based on the consideration that on a possible point scale of 1–5 the average value is 3 and with the number of 4 questions per component is this possible point average just 12.

Based on the obtained values, we state that elite tennis players achieved the highest average value in the Focusing on the current experience component, the second most frequently occurring component is the clear goals component. The loss of self-awareness component achieved the lowest rating.

When testing the null hypothesis at the 95% level of significance, the null hypothesis was rejected, which means that the obtained values reach a significant variance in comparison with the average value $\mu 0 = 12$. The only component for which we can confirm the null hypothesis is the Loss of self-awareness component, which reached the smallest ranking.

3.4. The most frequently experienced flow components by certified project managers

An identical test and the same formulated null hypothesis were used as for the sample of elite tennis players.

The results of the statistical analysis showed that the most frequently evaluated component among the sample of certified project managers is the focusing on the current experience component. This result coincides with the result of research in elite tennis players, as well as the evaluation of the second most frequently occurring component, which is clear goals component.

The null hypothesis was confirmed for only one component, and that is, as in tennis players, loss of self-awareness component.

3.5. Comparison of experienced flow components by elite tennis players and certified project managers

The graphic display below (**Figure 1**) compares the average values achieved for particular flow components. It is noticeable that elite tennis players achieve a higher average rating in the first 6 flow components. The biggest variance can be seen in the Focusing on current experience component. The other two components are better rated by certified project managers. In the Balance between challenge and ability component, the variance in the evaluations by tennis players and project managers is minimal in favor of tennis players, but in the order of hundredths.

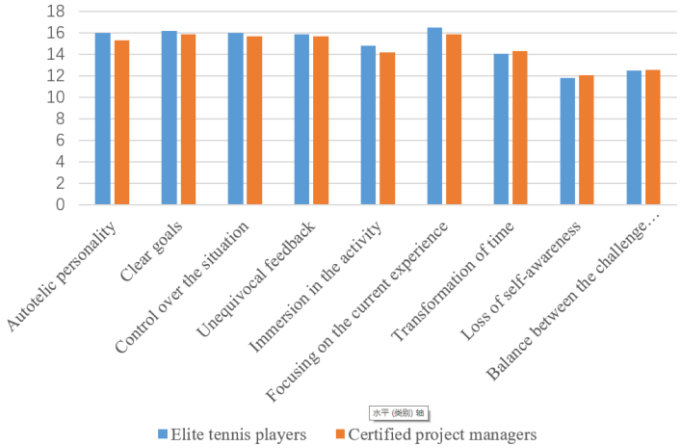

Figure 1. Comparison of experienced flow components by elite tennis players and certified project managers.

3.6. Representation of flow models

To analyze the representation of particular flow model, responses to two questions in the questionnaire were monitored. A total of three possible scenarios could have occurred:

1) In the case of answers to the given two questions in the order "yes" and "no", it was a channel flow model.
2) In the case of answers to the given two questions in the order "no" and "yes", it was a classic flow model.
3) In the case of answers to the given two questions in the order "yes" and "yes" or "no" and "no", no flow model was involved.

3.7. Variances in flow experiencing between elite tennis players and certified project managers

We identified variances in flow experiencing between elite tennis players and project managers using the Mann-Whitney U-test. In this context, the following null hypothesis was formulated: H0: Playing tennis, whether in training or match mode, by elite tennis players in comparison with performing the daily duties of a project manager, does not have a statistically significant effect on flow experiencing.

The hypothesis was tested at a significance level of 95% (0.05). The level of significance in most of the analyzed components shows a higher value, these values are shown in red in **Table 3**. For these components, we can confirm hypothesis H0, which means that there is a significant variance in flow experiencing between elite tennis players and certified project managers.

However, if we were to test this hypothesis at a significance level of 99% (0.01), then the null hypothesis would be confirmed in all analyzed flow components.

The student's t-test was used for all tested samples (see **Table 4**). Except for the control of the situation component, it was found at the significance level of 95% that there is no significant variance in flow experiencing in any of the analyzed samples. The only component for which we reject the null hypothesis is the control over the situation component.

Table 3. Mann-Whitney U-test results: elite tennis players vs. certified project managers.

Analyzed component	Analyzed sample	Average ranking	M-W-U	Z	p
Autotelic personality	Elite tennis players	57.92	1647.4	1.559	0.121
	Certified project managers	48.93	1161.1		
Clear goals	Elite tennis players	62.14	1989.3	2.501	0.012
	Certified project managers	46.53	1014.1		

Table 3. (*Continued*).

Analyzed component	Analyzed sample	Average ranking	M-W-U	Z	p
Control over the situation	Elite tennis players	60.12	1725.3	2.126	0.039
	Certified project managers	48.14	1081.2		
Unequivocal feedback	Elite tennis players	54.99	1483.9	0.518	0.619
	Certified project managers	51.97	1321.8		
Immersion in the activity	Elite tennis players	58.63	1646.6	1.529	0.131
	Certified project managers	50.14	1158.5		
Focusing on the current experience	Elite tennis players	58	1733.9	2.112	0.037
	Certified project managers	48.21	1070.2		
Transformation of time	Elite tennis players	53.15	1371.3	−0.232	0.841
	Certified project managers	53.98	1435.1		
Loss of self-awareness	Elite tennis players	49.95	1226.9	−1.154	0.272
	Certified project managers	57.12	1579.3		
Balance between the challenge and the individual's abilities	Elite tennis players	53.98	1428.9	0.211	0.862
	Certified project managers	52.76	1374.8		
Toher	Elite tennis players	58.14	1614.4	1.342	0.181
	Certified project managers	49.23	1189.5		

Explanations: p—probability, M-W U-Mann-Whitney U coefficient, Z-Z coefficient for probability determination.

Table 4. Student's t-test results: elite tennis players vs. certified project managers.

	t-stat.	Critical field t	p
Autotelic personality	−1.456	(∞; −1.983)∪(1.983; ∞)	0.142
Clear goals	−2.221	(∞; −1.983)∪(1.983; ∞)	0.041
Control over the situation	1.726	(∞; −1.984)∪(1.984; ∞)	0.040
Unequivocal feedback	1.123	(∞; −1.983)∪(1.983; ∞)	0.551
Immersion in the activity	1.201	(∞; −1.983)∪(1.983; ∞)	0.081
Focusing on the current experience	2.229	(∞; −1.985)∪(1.985; ∞)	0.016
Transformation of time	1.154	(∞; −1.983)∪(1.983; ∞)	0.921
Loss of self-awareness	1.814	(∞; −1.986)∪(1.986; ∞)	0.432
Balance between the challenge and the individual's abilities	1.452	(∞; −1.983)∪(1.983; ∞)	0.919
Toher	1.019	(∞; −1.983)∪(1.983; ∞)	0.159

Explanations: p—probability, t-stat.—the value of the coefficient t.

Student's t-test was used for all tested samples. Except for the control over the situation component, it was found at the significance level of 95% that there is no significant variance in flow experiencing in any of the analyzed samples. The only component for which we reject the null hypothesis is the control over the situation component.

3.8. Flow models representation in the analyzed samples

The representation of particular flow models is presented in the following graph (**Figure 2**).

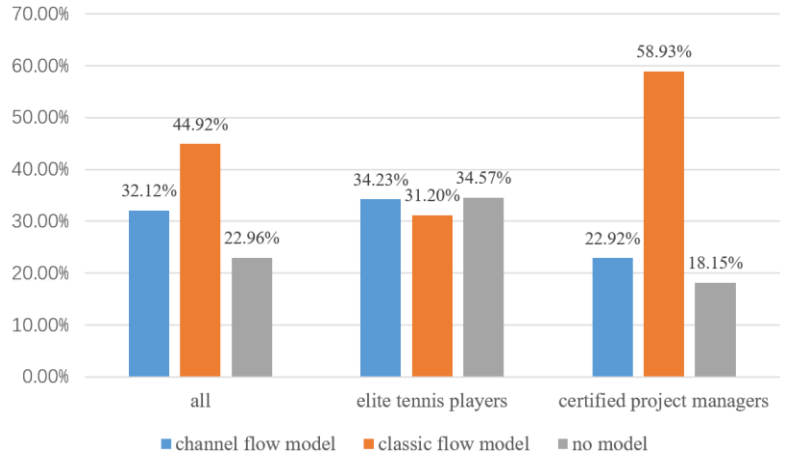

Figure 2. Flow models representation in the analyzed samples.

From the graph (**Figure 2**) above it clearly follows that there are no different values in the occurrence of particular flow models for the analyzed samples.

3.9. Hypothesis evaluation

We reject the hypothesis H1: Elite tennis players experience a significantly higher level of flow than certified project managers.

1) The Mann-Whitney U-test gives a reliability value of $p = 0.181$. When testing at a statistical significance level of 95%, this value is greater than 0.05 and thus the null hypothesis was not rejected.
2) The t-test gives a confidence value of $p = 0.159$. When testing at a statistical significance level of 95%, this value is greater than 0.05 and thus it was not possible to reject the null hypothesis.

4. Discussion

We consider the analyzed sample of respondents to be consistent, which is evidenced by the high value of Cronbach's alpha, the highest value of which was achieved as part of the evaluation of the results of the questionnaire survey as a whole. It follows that the flow experiencing should be measured on the basis of all components, and not by particular components.

The null hypothesis was verified using two statistical tests and it was confirmed by them, resulting in the rejection of the hypothesis that there are significant variances in flow experiencing between elite tennis players and certified project managers. The results point to the fact that flow can be experienced in both analyzed samples regardless of the specific activity and its difficulty. However, a significant variance in particular flow components experiencing was identified, where the results point to a significant variance in the flow experiencing in the control over the situation component where this component reached a significance level lower than 0.05.

The research was further focused on the correlation of particular flow components. It was statistically established that most of the flow components reach high values at the 95% significance level, which shows the mutual connection of the particular components and their influence on each other.

Time transformation and control over the situation are two components of the flow phenomenon, but based on statistical analysis, they do not interact with each other. However, this does not mean that these two components are not important for flow experiencing.

The components focusing on the current experience and clear goals ranked the highest rating, for both analyzed samples. These two flow components are considered by several authors, for example Nakamura and

Csikszentmihalyi[23], Jackson and Csikszentmihalyi[9], Kotler[47] or Csikszentmihalyi and LeFevre[6], to be crucial for flow experiencing. The explanation of this appears to be relatively simple, both elite tennis players and certified project managers are used to thorough preparation and planning, which corresponds to the high values of the clear goals component (without thorough goal determination and thorough planning, it is not possible to successfully implement projects, or to transition from the training process into match mode). Thanks to thorough preparation, they can then concentrate better when performing individual project management activities or playing tennis, which explains the high rating of the Focusing on current experience component.

The components control over the situation and unequivocal feedback show the biggest variances. Behind the fact that elite tennis players experience a higher value of the situation control component, we can clearly see the fact that there are much more risks associated with the performance of their activities than with the work of a project manager. In addition to being responsible for achieving their goals, elite tennis players have to face criticism not only from superiors (coaches, managers, club owners, ...) but also from fans and the media, so they are under more pressure than project managers.

In contrast, certified project managers scored high on the unequivocal feedback component. Several factors behind this result have been identified. These factors include a clear structure in the organization, clearly defined responsibilities and procedures that are given in advance and subsequently required and implemented, which is not possible in the case of tennis players simply because of the nature of their activity. Project managers clearly have more time to implement feedback.

The results of our research further revealed that in the case of project managers, flow experiencing is conditioned by high competence in the given activity, which is also confirmed by Massimini and Carli[48].

The classic model has the largest representation, more than half of the respondents are allocated to it. The values of elite tennis players showed a certain consistency, on the other hand, for project managers, a significant variance between the representation of the channel model and the classic model is visible, where the representation of the classic model is more than double. It is therefore logical that the classic model, which is highly correlated with goal orientation and performance, basically clearly belongs to tennis players.

5. Conclusion

This research of ours focused on the flow experiencing in elite tennis players and certified project managers, when no significant variance was found in the achievement of flow by the analyzed samples, indirectly confirms the results of our previous research that the personalities of elite tennis players and project managers are essentially correlated.

Our results cannot be compared with the results of available studies, as there are no studies or scientific articles comparing flow experiencing between athletes and managers. In the Czech and Slovak environment, we found only one diploma thesis comparing the flow experiencing between sports managers and managers of other fields[49]. Here we can state that this thesis brings similar findings to our research, especially in the context that most sports managers were recruited from elite athletes.

Author contributions

Conceptualization, KB and DP; methodology, LH; software, LH; validation, KB, DP and LH; formal analysis, MZ; investigation, MZ; resources, MZ; data curation, KB and LH; writing—original draft preparation, KB; writing—review and editing, KB; visualization, DP; supervision, LH; project administration, MZ. All authors have read and agreed to the published version of the manuscript.

Conflict of interest

The authors declare no conflict of interest.

References

1. Csikszentmihalyi M. Flow: The Psychology of Optimal Experience. New York: Harper Perennial; 1991.
2. Csikszentmihalyi M, Hunter J. Happiness in everyday life: The uses of experience sampling. Journal of Happiness Studies 2003, 4(2): 185-199. doi: 10.1023/a: 1024409732742
3. Csikszentmihalyi M. Finding Flow: The Psychology of Engagement with Everyday Life. New York: Basic Books; 1997.
4. Csikszentmihalyi M. Flow and the Foundations of Positive Psychology. Springer Netherlands, 2014. doi: 10.1007/978-94-017-9088-8
5. Csikszentmihalyi M, Csikszentmihalyi IS. Optimal experience: Psychological studies of flow in consciousness. Cambridge University Press; 1992.
6. Csikszentmihalyi M, LeFevre J. Optimal experience in work and leisure. Journal of Personality and Social Psychology. 1989, 56(5): 815-822. doi: 10.1037/0022-3514.56.5.815
7. Primeaux P, Vega G. Operationalizing Maslow: Religion and flow as business partners. Journal of Business Ethics 2002, 38(1/2): 97-108. doi: 10.1023/a: 1015733332183
8. Jackson SA. Toward a Conceptual Understanding of the Flow Experience in Elite Athletes. Research Quarterly for Exercise and Sport. 1996, 67(1): 76-90. doi: 10.1080/02701367.1996.10607928
9. Jackson SA, Csikszentmihalyi M. Flow in sports. Champaign: Human Kinetics; 1999.
10. Goddard SG, Stevens CJ, Swann C. Exploring runners' perspectives of potential strategies for flow interventions. Journal of Applied Sport Psychology. 2022, 35(3): 455-477. doi: 10.1080/10413200.2022.2046205
11. Wang CKJ, Demerin PAG. Relationship between self-determination theory and flow in the domain of sports and academics among student-athletes. Asian Journal of Sport and Exercise Psychology. 2023, 3(2): 114-120. doi: 10.1016/j.ajsep.2023.08.003
12. Blachowska A, Waleriańczyk W, Stolarski M. Striving for a perfect flow: Testing the 2 × 2 model of perfectionism in trail runners. Personality and Individual Differences. 2023, 212: 112278. doi: 10.1016/j.paid.2023.112278
13. Chilton G. Art Therapy and Flow: A Review of the Literature and Applications. Art Therapy. 2013, 30(2): 64-70. doi: 10.1080/07421656.2013.787211
14. Zhang Q, Liu X, Li Z, et al. Multi-experiences in the art performance tourism: Integrating experience economy model with flow theory. Journal of Travel & Tourism Marketing. 2021, 38(5): 491-510. doi: 10.1080/10548408.2021.1952148
15. Rodríguez-Ardura I, Meseguer-Artola A. Imagine, feel "there", and flow! Immersive experiences on m-Facebook, and their affective and behavioural effects. Information Technology & People. 2019, 32(4): 921-947. doi: 10.1108/itp-10-2017-0358
16. Smith MB, Koppes Bryan L, Vodanovich SJ. The counter-intuitive effects of flow on positive leadership and employee attitudes: Incorporating positive psychology into the management of organizations. The Psychologist-Manager Journal. 2012, 15(3): 174-198. doi: 10.1080/10887156.2012.701129
17. Zubair A, Kamal A. Work Related Flow, Psychological Capital, and Creativity Among Employees of Software Houses. Psychological Studies. 2015, 60(3): 321-331. doi: 10.1007/s12646-015-0330-x
18. Csikszentmihalyi M. Good business: Leadership, flow, and the making of meaning. Penguin; 2004.
19. Beard KS. Theoretically Speaking: An Interview with Mihaly Csikszentmihalyi on Flow Theory Development and Its Usefulness in Addressing Contemporary Challenges in Education. Educational Psychology Review. 2014, 27(2): 353-364. doi: 10.1007/s10648-014-9291-1
20. Yoo CW, Sanders GL, Cerveny RP. Exploring the influence of flow and psychological ownership on security education, training and awareness effectiveness and security compliance. Decision Support Systems. 2018, 108: 107-118. doi: 10.1016/j.dss.2018.02.009
21. Heutte J, Fenouillet F, Martin-Krumm C, et al. Proposal for a conceptual evolution of the flow in education (EduFlow) model. In: Proceedings of the 8th European conference on positive psychology (ECPP 2016). 2016.
22. Blažej A, Kostolanská K. Flow in sport: about building of a positive motivation in sport and in life (Czech). Praha: Grada Publishing; 2020.
23. Nakamura J, Csikszentmihalyi M. The Concept of Flow. Flow and the Foundations of Positive Psychology. Published online 2014: 239-263. doi: 10.1007/978-94-017-9088-8_16
24. Jackson SA, Marsh HW. Development and Validation of a Scale to Measure Optimal Experience: The Flow State Scale. Journal of Sport and Exercise Psychology. 1996, 18(1): 17-35. doi: 10.1123/jsep.18.1.17
25. Jackson SA, Eklund R, Leatherman G. The flow scales manual. Publishers Graphics; 2004.

26. Rieber LP, Smith L, Noah D. The value of serious play. Educational Technology. 1998, 38(6): 29-37.
27. Asakawa K. Flow Experience and Autotelic Personality in Japanese College Students: How do they Experience Challenges in Daily Life? Journal of Happiness Studies. 2004, 5(2): 123-154. doi: 10.1023/b:johs.0000035915.97836.89
28. Bay RH. Effective team management (Czech). Praha: Grada; 2000.
29. Colman AM. A Dictionary of Psychology. Oxford University Press, 2015. doi: 10.1093/acref/9780199657681.001.0001
30. Macková Z. Sport as mental distraction: New trends in sport psychology (Czech). Univerzita Komenského. 2003.
31. Ghani JA. Flow in human-computer interactions: Test of a model. In: Human factors in information systems: Emerging theoretical bases. 1995. pp. 291-311.
32. Bederson BB. Interfaces for staying in the flow. Ubiquity. 2004, 2004(September): 1-1. doi: 10.1145/1029383.1074069
33. Dormashev Y, Osin EN. Flow Experience Explained on the Grounds of an Activity Approach to Attention. Effortless Attention. Published online April 9, 2010: 287-334. doi: 10.7551/mitpress/9780262013840.003.0014
34. Novak TP, Hoffman DL. Measuring the flow experience among web users. Interval Research Corporation. 1997, 31(1): 1-35.
35. Ghani JA, Supnick R, Rooney P. The experience of flow in computer-mediated and in face-to-face groups. 1991.
36. Ellis GD, Voelkl JE, Morris C. Measurement and Analysis Issues with Explanation of Variance in Daily Experience Using the Flow Model. Journal of Leisure Research. 1994, 26(4): 337-356. doi: 10.1080/00222216.1994.11969966
37. Dietrich A, Stoll O. Effortless Attention, Hypofrontality, and Perfectionism. Effortless Attention. Published online April 9, 2010: 159-178. doi: 10.7551/mitpress/8602.003.0008
38. Skadberg YX, Kimmel JR. Visitors' flow experience while browsing a Web site: its measurement, contributing factors and consequences. Computers in Human Behavior. 2004, 20(3): 403-422. doi: 10.1016/s0747-5632(03)00050-5
39. Bočková K, Čepelová S. Exploring Personality Traits in Elite Sport Players and Associate with a Good Project Managers. Emerging Science Journal. 2023, 7(4): 1315-1331. doi: 10.28991/esj-2023-07-04-019
40. Liu S, Tenenbaum G. Research Methods in Sport and Exercise Psychology. Oxford Research Encyclopedia of Psychology. Published online November 20, 2018. doi: 10.1093/acrefore/9780190236557.013.224
41. Csikszentmihalyi M, Larson R. Validity and Reliability of the Experience-Sampling Method. The Journal of Nervous and Mental Disease. 1987, 175(9): 526-536. doi: 10.1097/00005053-198709000-00004
42. Rheinberg F, Vollmeyer R, Engeser S. Die Erfassung des Flow-Erlebens. In: Stiensmeier-Pelster J, Rheinberg F. (editors). *Diagnostik von Motivation und Selbstkonzept*. Hogrefe Verlag GmbH & Company KG;2003. pp. 261 - 279.
43. Elnes M, Sigmundsson H. The General Flow Proneness Scale: Aspects of Reliability and Validity of a New 13-Item Scale Assessing Flow. SAGE Open. 2023, 13(1): 215824402311538. doi: 10.1177/21582440231153850
44. Engeser S. Advances in Flow Research. Springer New York, 2012. doi: 10.1007/978-1-4614-2359-1
45. Csikszentmihalyi M, Csikszentmihalyi M. Play and Intrinsic Rewards. Journal of Humanistic Psychology. 1975, 15(3): 41-63. doi: 10.1177/002216787501500306
46. Moneta GB. The Flow Model of Intrinsic Motivation in Chinese: Cultural and Personal Moderators. Journal of Happiness Studies. 2004, 5(2): 181-217. doi: 10.1023/b: johs.0000035916.27782.e4
47. Kotler S. The rise of superman: Decoding the science of ultimate human performance. Houghton Mifflin Harcourt. 2014.
48. Massimini F, Carli M. The systematic assessment of flow in daily experience. Optimal Experience. Published online August 26, 1988: 266-287. doi: 10.1017/cbo9780511621956.016
49. Pecková N. Comparison of the state of flow in sports managers and managers of other professions [Master's thesis]. Brno: Masaryk University. 2023.