

Doctoral (PhD) Dissertation Theses

EXAMINING ENDURANCE SPORTS COMMITMENT AND THE FACTORS INFLUENCING PARTICIPATION IN HUNGARY

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1. BACKGROUND OF THE RESEARCH, OBJECTIVES, AND PRESENTATION OF THE RESEARCH HYPOTHESES

In recent decades, endurance sports have gained huge popularity worldwide, including marathon running, trail running, road cycling, triathlon, open water swimming, horseriding, and obstacle racing. Endurance sport events have become popular globally because each event offers a unique experience due to its distinctive environment, duration, organization, and participants (O’Neil–Steyn, 2007; Hallman–Breur, 2010). Previous research has shown that, in addition to the Sport Commitment Model (SCM), other approaches must also be considered to fully measure commitment to sport. Commitment has been examined from different perspectives, leading to the development of various models and theories (Myburgh, 2017); however, these have not yet been measured in the Hungarian context. Research conducted in Hungary has not included variables such as lifestyle or event-specific characteristics (Kozma et al., 2015; Szemes et al., 2016; Berki–Pikó, 2020; László, 2020).

Participation in endurance sports can be motivated by several factors, one of the most important being health promotion (Kinczel–Müller, 2020; Kinczel–Müller, 2022). Sport can help prevent lifestyle-related diseases (Müller et al., 2019a), and it also contributes to improving mental well-being, health prevention, and physical fitness (Snethen–Broome, 2007). In addition to health, recreation is also an important factor among amateur athletes, including the formation of new social relationships and friendships, a sense of belonging, competitiveness, mental renewal, and simply the enjoyment of sport itself (Malchrowicz–Moško–Poczta, 2018). Endurance athletes who participate in competitions spend significant amounts on sportswear, training, nutritional supplements, specialized equipment, and other sport-related products (Shipway–Jones, 2007; Rauter, 2014). This type of sporting activity not only provides recreation but eventually becomes an integral part of their lives (Stevinson–Hickson, 2014).

In Hungary, the popularity of mass running began to increase in the 1970s, when jogging became a widely accepted form of exercise and major cities started organizing running competitions open to amateur participants. The first official marathon in Hungary was held in 1984, which was among the earliest in Eastern Europe, although it occurred 15 years later than in overseas regions and 10 years later compared to Western Europe (Perényi, 2015). The topic is particularly important because, according to the most recent European Union health surveys, Hungary is still among the least physically active nations, and the proportion of people engaging in regular physical activity remains low (Eurobarometer, 2022).

The study of this topic is significant because it provides a comprehensive understanding of what motivates active athletes to engage in endurance sports and how less active individuals become highly committed participants. Since relatively few people in Hungary regularly engage in endurance training or participate in such competitions, it is essential to identify the methods and influencing factors that can increase interest in endurance sports and willingness to participate in events (Eurobarometer, 2022). There is still a limited number of studies in Hungary examining what motivates individuals to commit to regular endurance sport participation, to engage consistently, to take part in related sporting events, and to demonstrate increasing willingness to spend on sport-related products and health-conscious lifestyles (Kozma et al., 2015; Szemes et al., 2016; Berki–Pikó, 2020; László, 2020). In particular, research from a business and management perspective is lacking in Hungarian literature. Studies that simultaneously examine participation activity, sport commitment, lifestyle characteristics (travel habits, consumption and spending patterns, leisure activities), and factors influencing participation in sporting events among Hungarian amateur endurance athletes (Myburgh, 2017). From a business and management perspective, researching this topic is important because endurance sport events are complex services whose success largely depends on understanding participants' motivations, expectations, and consumer characteristics.

In my research, I seek to identify the factors influencing sport commitment among Hungarian participants in endurance sport competitions. I aim to determine which participation factors contribute to increasing levels of commitment. Why do some individuals participate in 15–20 competitions annually, train 10–12 hours per week, or spend up to 1 million HUF per year on sport-related products and services? Furthermore, my research examines how factors such as training frequency, participation in competitions, use of sport products, engagement in sport activities, and health-conscious nutrition influence the commitment of endurance athletes. The main objective of my study is to explore the economic, sociodemographic, and individual factors underlying high levels of commitment to endurance sports.

Research Questions

1. Do economic factors (income, annual sport-related expenditure) affect participation in sport activities in Hungary?
2. Which factors play a key role in shaping sport commitment among endurance athletes?

3. Which level of athletes (self-reported questionnaire, based on sport history, years of participation, training frequency, and participation in competitions) demonstrates strongest commitment to sport?
4. Do athletes who train more than 8 hours per week or participate in more than 8 competitions per year exhibit higher levels of sport commitment?
5. Do sociodemographic factors influence active participation in endurance sport activities?

Hypotheses

1. In Hungary, participation in endurance sport activities is influenced by economic factors (income and annual sport-related expenditure).
2. The positive impact of sport on lifestyle is a key determinant of sport commitment among Hungarian endurance athletes.
3. Athletes who self-classify competitive level participants (based on sport history, years of involvement, training frequency, and competition participation) demonstrate higher sport commitment than athletes at lower levels.
4. Athletes who train more than 8 hours per week or participate in more than 8 competitions annually exhibit higher sport commitment.
5. Sociodemographic factors influence active participation in sport activities.

2. DATABASE AND METHOD OF RESEARCH

The methodological and theoretical foundation of the present study is based on the Sport Commitment Model developed by Scanlan and colleagues (2003) and the research conducted by Myburgh (2017). Myburgh (2017) developed a comprehensive framework by extending the Sport Commitment Model (Scanlan et al., 1993; Scanlan et al., 2003), which enabled the mapping of the sport tourism context in South Africa. This model not only incorporates the original variables of the Sport Commitment Model (Scanlan et al., 2003) - such as personal investment, opportunities for involvement, participation options, social constraints, social support, and enjoyment - but also considers additional factors influencing commitment, including behavioral intentions, participation frequency, media consumption, and sport-related expenditures (Myburgh, 2017). The primary aim of the present study is to apply and adapt this model to the Hungarian context, and to examine which factors most strongly influence sport commitment among domestic endurance athletes.

Within the present study, the definition of participation is conceptualized not only as attendance at sport competitions, but as a broader construct including lifestyle-related engagement and the integration of sport into everyday life. This extended definition integrates health-conscious behavior, sport-oriented media consumption, sport-related expenditures, and involvement in community-based sport activities (Myburgh, 2017). The objective of this study was not to replicate the model in the Hungarian context, but rather to examine the specific factors that contribute to becoming a committed endurance athlete in Hungary. Based on Myburgh's (2017) research, factor analysis revealed four well defined predictors of endurance athletes' commitment: (1) Enjoyment, personal investments and involvement opportunities; (2) Involvement alternatives and social constraints; (3) Dedication and social support; and (4) Status socialisation and travel. According to Myburgh (2017), these four dimensions represent context-specific empirical outcomes of the study and has not been previously shown in earlier research grounded in the theoretical framework of the Sport Commitment Model (Scanlan et al., 2003).

2.1 Theory and Method of the Primary Research

The present study is grounded in both secondary and primary research methods. In the secondary research phase, the consumer-side perspective of endurance sports (i.e., athletes) was examined, with particular attention to the factors influencing sport commitment and the consumption profiles associated with sport events. The research explored how health and fitness, as well as broader lifestyle components, are reflected among participants in endurance competitions. Travel behavior patterns were also examined and the economic impacts of sport events from a tourism perspective.

A comprehensive review of the most relevant national and international literature was conducted. This review covered research on athletes' behavioral patterns and physical activity, the importance of endurance sport events in sport tourism and the economy, the characteristics of endurance sports and sport events, and their tourism-related significance. Furthermore, the theoretical framework of the Sport Commitment Model and its key constructs were systematically examined, together with prior empirical studies applying the model. The primary research consisted of a quantitative study employing a structured questionnaire survey. The survey investigated the types of endurance sport events in which respondents participate, their participation patterns, lifestyle determinants, sport commitment levels, annual sport-related expenditures, and the factors influencing their participation in

endurance sport events. The aim of the current study is to analyze the extent to which participation-related and lifestyle-related factors contribute to athletes' levels of sport commitment, and to examine how endurance sport participation becomes increasingly significant both at the individual level and within the broader economic and tourism context.

The questionnaire applied in this study was based on the sport commitment survey instrument developed by Myburgh (2017). The questionnaire consisted of the following sections: socio-demographic characteristics; endurance sports and disciplines; participation patterns; lifestyle-related factors; determinants of sport commitment; sport-related expenditures; and factors influencing participation in endurance sport events. The questionnaires were forwarded via e-mail to the event organizers, who then distributed them to the adult participants of their events. The data were collected during the 2023 competition season, from March 1 to November 30.

2.2 Social-Demographic Profile of Participants

A total of 674 adult people were included in the analysis. In terms of gender distribution, 342 participants were male (50.7%) and 332 were female (49.3%). Regarding age, the majority of individuals ($n = 394$; 58.5%) were over 40 years old, followed by those aged between 31 and 40 years ($n = 201$; 29.8%), and finally those aged between 18 and 30 years ($n = 79$; 11.7%). Regarding marital status, 346 respondents were married (51.3%), 187 were in a relationship (27.7%), 99 were single (14.7%), and 42 participants (6.2%) classified themselves in the "other" category (e.g., widowed or divorced).

Regarding place of residence, 145 participants (21.5%) lived in the capital city, 184 (27.3%) in county seats, 238 (35.3%) in other towns, and 107 participants (15.9%) in villages or municipalities. The highest level of education was categorized into internationally comparable levels. The majority of respondents ($n = 448$; 66.5%) held a university degree (undergraduate and postgraduate education). This was followed by people with vocational secondary education ($n = 118$; 17.5%), while 11% ($n = 74$) had completed secondary education. A smaller group ($n = 30$; 4.5%) held vocational training qualifications. Only four respondents (0.6%) reported having completed primary education as their highest level of education.

Regarding employment status, most participants were employed ($n = 512$; 76%), followed by entrepreneurs ($n = 102$; 15.1%) and students ($n = 19$; 2.8%). Most respondents lived in two-person households ($n = 199$; 29.5%), followed by those based in four-person ($n = 161$; 23.9%)

and three-person households (n = 152; 22.6%). In terms of per capita net monthly income, the largest group (n = 249; 36.9%) reported an income exceeding 300,000 HUF. This was followed by respondents with a per capita income between 200,001 and 250,000 HUF (n = 118; 17.5%) and those earning between 250,001 and 300,000 HUF (n = 107; 15.9%) (see Table 1).

Table 1. Distribution of Sociodemographic Characteristics of the Sample

Sociodemographic Variable	Categories	Percentage (%)
Gender	Male	50,70%
	Female	49,30%
Place of residence	Capital city	21,50%
	County town	27,30%
	Town	35,30%
	Village	15,90%
Age	18-30 years	11,70%
	31-40 years	29,80%
	Over 40 years	58,50%
Marital status	Single	14,70%
	In a relationship	27,70%
	Married	51,30%
	Other (divorced, widowed)	6,30%
Highest level of education	Undergraduate, postgraduate	66,50%
	Secondary education	11,00%
	Vocational secondary education	17,50%
	Vocational training qualification	4,50%
	Primary education	0,60%
Employment status	Entrepreneur	15,10%
	Employed	76,00%
	Student	2,80%

	Job seeker	23,70%
	Homemaker	1,00%
	Retired	0,60%
	Parental leave	1,80%
Household size	One person	13,10%
	Two persons	29,50%
	Three persons	22,60%
	Four persons	23,90%
	Five persons	9,20%
	Six or more persons	1,80%
Per capita net monthly income	Below 100,000 HUF	2,50%
	100,001–150,000 HUF	12,00%
	150,001–200,000 HUF	15,10%
	200,001–250,000 HUF	17,50%
	250,001–300,000 HUF	15,90%
	Above 300,000 HUF	36,90%

Source: Sociodemographic profile of participants in the present study (N = 674)

2.3. Statistical Methods

Following the pilot study, questions of the survey that were irrelevant to the research topic or culturally inappropriate were either removed or grouped, and the overall length of the questionnaire was optimized to improve the motivation of completion. Feedback from pilot respondents indicated that the questionnaire was too long, resulting in incomplete responses. Therefore, these items were excluded from the final version of the survey (Maklári et al., 2025). Cronbach's alpha was used to assess the reliability of the scales. When constructing factors, scales, or indices within a questionnaire, the combined measure should generally achieve an alpha value of at least 0.70. Items with insufficient reliability (typically $\alpha < 0.70$) were excluded from the final questionnaire to ensure the internal consistency of the respective factors (Paic et al., 2018).

The statistical analysis proceeded with several methods. Initially, contingency table analysis was conducted to explore relationships between two or more categorical variables, providing a clear tabular overview of potential associations (Gyulavári et al., 2017). The Pearson chi-square test was applied to assess statistical significance, and the strength of the associations was evaluated using Cramer's V, which ranges from 0 to 1. Correlation strength can range from 0 to +1 or 0 to -1, depending on the direction of the relationship (Akoglu, 2018). For factor analysis, principal component analysis (PCA) with Varimax rotation was applied. PCA belongs to the family of dimensionality reduction techniques and is particularly useful when datasets contain multiple variables with a high degree of intercorrelation. The aim of this was to reduce the large number of observed variables to a smaller set of systematic factors while preserving as much information as possible (Osborne & Costello, 2009). The extracted factors were examined using ANOVA, a statistical method that evaluates differences between group means by comparing the variance between and within groups. For this study, a one-way ANOVA was the most appropriate, as it tests whether significant differences exist among the means of multiple groups for a given variable (Pallant, 2007). Where only two groups were compared (e.g., gender), an independent-samples t-test was applied. The t-test is a statistical procedure used to compare the means of two groups, determining whether the observed difference is likely due to random sampling error or represents a statistically significant effect (Ugoni & Walker, 1995).

Finally, cluster analysis was performed to categorize respondents into groups based on similar characteristics. Hierarchical clustering was used first to explore the optimal number of clusters, followed by k-means clustering to refine the cluster structure. The factors derived from the factor analysis were used as input variables for the clustering procedure. Cluster solutions are typically evaluated based on separation (distance between clusters) and cohesion (within-cluster homogeneity), which are considered key indicators of the model's reliability and validity (Szüle, 2019) (see Table 2).

Table 2: Research design and applied methods

Secondary research	Primary research	
<i>Literature review</i>	<i>Quantitative questionnaire (N = 674)</i>	<i>Data Analysis</i>

Sport tourism	Endurance sport and events	Sport Commitment Model	Paper-based	Online	Cronbach's alpha	Descriptive statistics	Factor analysis	T-test	ANOVA	Cluster analysis
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Source: Data collected for the present study

3. Main Findings of the Research

The study aimed to explore the influencing factors of sport commitment among endurance sport event participants, identify the drivers of lifestyle changes, and to examine sport-related spendings and participation patterns. The analysis extended beyond competition participation and its frequency, encompassing training time and the consumption of sport-related media content as well. The research objectives were addressed within a theoretically grounded framework based on a comprehensive review of relevant national and international literature.

The first research objective aimed to examine whether economic factors (e.g., income level and annual sport-related expenditure) influence participation in endurance sport activities in Hungary.

H1: In Hungary, participation in endurance sport activities is influenced by economic factors (income and annual sport-related expenditure).

Based on the primary data analysis, the hypothesis can be accepted. Alongside the examined economic variables, sociodemographic characteristics also exert a measurable influence on participation in endurance sports. The results of the cross-tabulation analysis indicate that weekly training time increases proportionally with income level. Participants in the highest income category typically spend more than eight hours per week training, whereas those in the lowest income category spend less than five hours per week on sport activities. A similar pattern is observed regarding competition intensity: people with higher income levels are more likely to participate in eight or more competitions annually. The results of ANOVA also show that the perceived importance of training differs across income levels. This factor is less important among respondents earning below HUF 150,000 ($M = 2.8$) compared to those with an average income of HUF 300,000 ($M = 3.29$). Several studies have highlighted that financial constraints may constitute a significant barrier to sport participation (Godbey et al., 2005). Furthermore, Lindström et al. (2001) argue that participation in endurance events such as marathons or triathlons may entail substantial financial burdens. Additional cross-tabulation analyses conducted in the present research further confirm that income level

significantly influences annual sport-related expenditure. Participants earning below HUF 150,000 annually reported, in large proportions, spending less than HUF 550,000 per year on sport-related activities. In contrast, those in the highest income category reported annual sport expenditures exceeding HUF 800,000. Respondents aged 18–29 also reported annual sport-related expenditures below HUF 550,000. This finding may be interpreted in light of the previously presented cross-tabulation results, as younger participants are more likely to be students or early-career professionals with lower income levels, which may limit their ability to spend higher amounts on sport-related products.

The second research objective aimed to identify which factor has a key role in shaping commitment among endurance athletes.

H2: The perceived positive impact of sport on lifestyle plays a central role in shaping commitment for Hungarian endurance athletes.

The findings of the current study support this hypothesis. Among the identified factors, those related to a health-oriented lifestyle received the highest mean values. In the context of endurance sport participation, respondents rated quality-of-life-related factors ($M = 4.25$) and healthy nutrition ($M = 3.60$) as the most important dimensions. These findings are consistent with prior research. Schnell, Mayer, Diehl, Zipfel, and Thiel (2014) demonstrate that a health-conscious lifestyle occupies a central position in the lives of endurance athletes. Such individuals tend to avoid alcohol consumption, pay particular attention to healthy nutrition, and consciously regulate both the duration and quality of sleep. Commitment to regular sport participation has also been shown to have positive effects on both physical and mental health, as well as to enhance overall well-being and life satisfaction (Gratton, 2004). The third research objective aimed to determine which level of athletes demonstrate the highest degree of sport commitment. Athlete level was defined based on self-reported indicators, including sport history, sporting age, frequency of training, and competition participation.

H3: Individuals who classify themselves as high-level athletes (based on self-reported sport history, sporting age, frequency of training, and competition participation) demonstrate a higher level of sport commitment than those participating at lower levels.

The empirical results support this hypothesis, leading to the rejection of the null hypothesis. Regarding the enjoyment and personal investment factor, high-level athletes reported significantly higher mean scores ($M = 4.18$) compared to average ($M = 3.02$) and veteran

athletes ($M = 3.02$). These findings align with Wicker, Breuer, and Pawlowski (2009), who argue that more highly committed athletes tend to spend more on sport-related activities. Similarly, Yair (1990) suggests that financial expenditures may serve as symbolic expressions of commitment. Significant differences were also observed for the training factor. High-level athletes ($M = 3.89$) reported higher scores than recreational or fitness participants ($M = 3.38$). This factor includes items such as following a structured training program, adjusting sleep habits to training and competition schedules, and training with a coach. These elements appear to be more important for high-level participants. This finding is consistent with Beaton et al. (2011), who report that individuals demonstrating higher levels of commitment tend to participate more frequently in sport events and engage in training more regularly.

High-level athletes ($M = 3.76$) also reported stronger agreement regarding sport participation intensity compared to other groups (average athletes: $M = 2.92$; recreational/fitness: $M = 3.05$; veterans: $M = 3.06$). For this group, planning weekends and travel around sport activities and actively seeking endurance sport events are particularly important. According to Beaton and Funk (2008), sport involvement evolves progressively from the first interest toward regular participation and commitment. Cluster analysis results further reinforce these findings, showing that a considerable proportion of high-level athletes (53.2%) belong to the “committed athletes” cluster.

The fourth research objective aimed to examine whether individuals who train more than eight hours per week or participate in more than eight competitions annually demonstrate higher levels of sport commitment.

H4: Athletes who train more than eight hours per week or participate in more than eight competitions annually demonstrate higher levels of sport commitment.

The results confirm this hypothesis. ANOVA indicates that participants who train more than eight hours per week ($M = 3.78$) report significantly higher levels of enjoyment and personal investment compared to those training less frequently (1–4 sessions per week: $M = 2.81$; 5–8 sessions per week: $M = 3.30$). A similar pattern emerged with respect to competition frequency: respondents participating in more than eight events annually ($M = 3.55$) assign greater importance to this factor than those competing in a maximum of four events per year ($M = 3.05$). Sport-oriented media and product consumption ($M = 3.23$ vs. $M = 2.80$), training commitment ($M = 3.45$ vs. $M = 2.56$), sport participation intensity ($M = 3.49$ vs. $M = 2.87$), and healthy nutrition ($M = 3.79$ vs. $M = 3.36$) are all rated as more important by those training

more than eight hours per week compared to those training less than four hours weekly. For many individuals sport becomes an integral part of everyday life, although excessive involvement may also lead to an overcommitment of time and personal resources (Bíró, 2018).

The analysis of competition frequency further supports these findings. Training ($M = 3.20$ vs. $M = 2.95$), sport participation intensity ($M = 3.68$ vs. $M = 2.74$), and community sport engagement ($M = 3.21$ vs. $M = 2.65$) are significantly more important among those participating in more than eight competitions annually compared to those competing in no more than four events per year. Funk et al. (2011) argue that endurance competitions positively influence athletes' fitness levels, while Wilhelm, Stanis, Schneider, and Russell (2009) report that competition participation strengthens commitment toward an active lifestyle. Cross-tabulation analysis also confirms the hypothesis. Athletes training more than eight hours per week typically participate in more than eight competitions annually, spend over HUF 850,000 per year on sport-related products, compete in multiple types of endurance or multisport events, and tend to classify themselves as intermediate or high-level athletes. In contrast, those training fewer than five times per week generally participate in no more than four competitions annually, spend less than HUF 550,000 on sport equipment, and most commonly compete only in running events. Consistent with Scanlan's (1993) theoretical framework, Fernandes, Correia, Abreu, and Biscaia (2013) found that commitment is positively associated with several forms of sport consumption, including sport equipment purchases. In the present research, athletes reported the highest expenditure on sport shoes, followed by sport apparel, while sport-specific accessories accounted for the lowest spending category. This pattern may partly reflect the lifestyle and symbolic dimensions associated with sport footwear. Casper (2007) similarly reports that higher-level athletes are more willing to invest in more advanced and higher-priced sport equipment, supporting the conclusions of the present analysis. Cluster analysis further reinforces H4. Within the "committed" cluster, 42% of respondents train more than eight hours per week and 43.5% participate in more than eight competitions annually, indicating statistically significant differences between clusters.

My fifth research objective was to examine whether sociodemographic factors influence active participation in endurance sport activities.

H5: *Sociodemographic factors influence active participation in sport activities.*

I also accept this statement, as sociodemographic factors also influence participation in endurance sports. Based on sociodemographic factors, gender differences are also observable. Men and women appear to be motivated by different factors in endurance sport participation. The results of the independent samples t-tests show these differences. Participation in sport activities is rated as more important by women ($M = 3.26$) than by men ($M = 3.15$). Similarly, support for community sport initiatives is more strongly emphasized by women ($M = 3.07$) compared to men ($M = 2.78$). Healthy nutrition is also considered more important among female participants ($M = 3.74$) than among male respondents ($M = 3.47$). Women are more strongly motivated by engagement in community, self-fulfilment, and social participation, while men are primarily driven by competition and achievement. These findings are consistent with previous research. Malchrowicz and Poczta (2018) report that women are mainly motivated by opportunities to escape everyday routines, engage in community participation, and maintain a healthy lifestyle, while men are more strongly motivated by competitiveness and the achievement of goals. Similarly, Oliveira et al. (2017) identify gender-based differences in sport motivation, suggesting that women are mostly guided by social and health-related considerations, whereas men are mostly driven by competitive and performance-oriented motives.

Significant differences in sport participation are also observable based on marital status. Sport participation is rated as more important among single respondents ($M = 3.45$) than among those who are married ($M = 3.13$). This finding is consistent with the results of Taniguchi and Shupe (2012), who argue that marriage is associated with an increase in responsibilities - such as the arrival of a first child - which may significantly reduce both the willingness and the frequency of sport participation. When examining sociodemographic variables, an important methodological implication emerges: the joint analysis of multiple factors provides a more accurate understanding of participation patterns. In the context of adult sport participation, the most pronounced decline typically occurs when two life-course events coincide—marriage and the birth of the first child. During these transitional periods, a significant decrease in sport participation is particularly evident among women compared to men (Miller et al., 2019). In order to provide a more layered understanding of the findings, it is important to note that life events related to family changes (e.g., marriage or starting a family) may reduce both the level of sport commitment and the regularity of participation. In contrast, life events associated with education or employment (such as entering higher education or increased working hours) do not necessarily lead to a decline in sport participation (Miller et al., 2019).

The 18–30 age group ($M = 3.49$) shows higher mean values compared to the 31–40 ($M = 3.16$) and 40+ age groups ($M = 3.17$), indicating that younger respondents are more actively involved in sport-related activities. Previous research suggests that physical activity tends to decline across the life course as age increases (Dumith et al., 2011; Telama & Yang, 2000). Moreover, the previously discussed family-related life events (Miller et al., 2019) may further influence participation patterns as individuals grow older.

4. Contributions from the Research

The dissertation developed a comprehensive model explaining the determinants of consumer interest in endurance sport participation in the Hungarian context by integrating the Sport Commitment Model (Scanlan, 1993) with the current theoretical frameworks.

1. This research represents the first empirical investigation in Hungary to examine the factors influencing consumer engagement in endurance sport participation. Based on the findings, a complex explanatory model was constructed by applying the Sport Commitment Model (Scanlan, 1993) alongside participation models.
2. The results indicate that income is a primary factor of participation in endurance sport events. Athletes with lower income levels participate in substantially fewer competitions annually compared to those with higher earnings. This conclusion is further supported by the descriptive findings, as a large proportion of respondents identified “affordable event registration and travel costs” as one of the most important factors influencing participation decisions.
3. Using cluster analysis, this study is the first to identify distinct types of endurance sport participants in the Hungarian context. Four clearly distinguishable athlete segments emerged:
 - **Occasional participants:**
This cluster is predominantly composed of men, typically older individuals, with divorced and widowed participants overrepresented. They demonstrate relatively low levels of activity. The group mainly consists of recreational and veteran athletes with low sport-related expenditure. Their competitive engagement is limited, as they participate in fewer than four events per year.
 - **Committed participants:**
Women constitute the majority within this segment. Members are generally younger

and primarily belong to middle- and upper-income groups. They train more than eight hours per week and compete in more than eight events annually. More than half of this cluster consists of high-performance athletes. They spend the highest amounts on sport-related products and services.

- **Health-conscious participants:**

Men slightly outnumber women in this cluster. It is primarily composed of younger adults, typically between 31 and 40 years of age, with single individuals being overrepresented. Higher-income participants are also prevalent in this segment. Many train between four and eight hours per week, while a considerable proportion exceed eight hours of weekly training. Despite relatively high training volumes, their competition participation is more moderate, typically ranging between four and eight events per year. Their sport-related expenditure is at a medium to high level.

- **Lifestyle changers:**

This segment includes slightly more men than women and is characterized by middle-aged and older participants, with married individuals being overrepresented. Lower-income respondents are prevalent in this cluster. It mainly consists of recreational, veteran, and fitness-oriented participants. They demonstrate low training activity (less than four hours per week) and similarly limited annual competition participation. Their sport-related expenditure is very low.

4. The complex examination of sport commitment revealed that the strongest determinants of commitment are weekly training time, annual competition participation, and expenditure on sport-related products and services. Higher levels of these habit indicators are associated with stronger sport commitment.

5. Practical Implications

The positive impact of sport on mental health is nearly as significant as its role in maintaining physical health. Regular participation in sport contributes to improved subjective well-being, strengthens community experience, and may lead to higher levels of happiness (Wheatley and Bickerton, 2016). Similarly, Wicker, Breuer, and Pawlowski (2009) found that well-developed sport infrastructure increases the willingness to engage in sport among specific target groups, particularly when considering gender and age differences.

Based on the reviewed literature, it is evident that in Hungary, particular emphasis should be placed on promoting a healthy lifestyle from early childhood. Society should be encouraged to regularly engage in forms of physical activity that are both accessible and sustainable for the long term. According to the Eurobarometer (2022), Hungary performs significantly below the European Union average in terms of sport participation rates. The WHO Europe report *Health-Enhancing Physical Activity in the European Union* highlights that regular physical activity is not only crucial for individual health but also generates substantial economic and social benefits. It reduces pressure on healthcare systems, improves work capacity, and enhances overall social well-being. Moreover, the economic significance of sport within the EU is considerable (for example, through sport tourism) accounting for approximately 2% of GDP (HEPA, 2024). Comprehensive strategies such as *Move* (2015), *Active for Employment* (2022), and *Get Active* (2025) provide structured frameworks for promoting sport participation and reducing physical inactivity in different social groups (Piggin, 2015; Morgen et al., 2022; GOV.UK, 2025). The effectiveness of such programs depends on extensive research assessing societal conditions, habits, and needs, as well as identifying key barriers to participation, including financial constraints, time limitations, and inadequate infrastructure. Strategic planning and evidence-based intervention programs, combined with infrastructure development, are essential components of successful implementation. For example, the UK government’s *Get Active* (2025) initiative aims to ensure that sport is accessible to all and to foster a more active nation. Through close cooperation with local governments, the program seeks to develop economically and environmentally sustainable sport opportunities with a strong emphasis on inclusion. Its objective is to engage one million additional children in sport by 2030. Similarly, *Active for Employment* (2022) highlights how sport can support young people advance in their careers.

Table 3 outlines practical intervention to identify clusters. Based on the cluster analysis, specific policy and marketing interventions can be formulated for each segment in order to promote sport participation, commitment, and long-term engagement.

Table 3. Practical Applications of the Results

Cluster	Characteristics	Suggested Interventions/ Development Areas	Organizational and operational implementation	Recommended Sport
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Occasional Athletes	Low endurance sport activity; not sufficiently motivated to join a sports community; personal development in sport is not a priority.	Local events: Provide sport and competition opportunities near their residence. Community programs: Spark interest through engaging experiences. Awareness-raising: Promote an active lifestyle.	Partnership model, cost planning Program portfolio, communication Campaign planning	Councils: Organize free or low-cost local competitions. Event organizers: Fun runs, short-distance tours where participation is the main goal. National level: Launch media campaigns promoting active lifestyles.
Committed Athletes	Endurance sport is an integral part of daily life; fully committed to sport; want to participate in as many events as possible; follow sport-related media; motivated by continuous improvement rather than health.	Personalized offers: Provide tailored sport and competition opportunities. Maintain community experience: Create athlete communities.	Segmentation and personalization, pricing, loyalty program Community management, quality assurance	Event organizers: Plan annual competition calendars, implement loyalty programs. Clubs: Establish training camps or groups for community-based training.
Health-Conscious Athletes	Focused primarily on maintaining a healthy lifestyle; aim to improve fitness through training; not motivated by competitions or community sport; supporting community initiatives is not a priority.	Infrastructure provision: Ensure availability of facilities for physical activity. Promote health orientation: Encourage and motivate healthy habits. Strengthen social connections: Use community experiences to motivate participation in sport communities.	Project management, utilization Service ecosystem Community onboarding, experience design	State: Build fitness parks and running tracks. Municipalities: Organize community runs or group workouts. Event organizers: Develop events aimed at building community, such as mass-participation events
Lifestyle-Changing Athletes	New to endurance sport; primary goal is to improve quality of life; show some activity in training and competition.	Beginner programs: Community training and sports to maintain motivation. Community building: Facilitate entry into amateur sports clubs.	Service package and scheduling Access system, discount system	Clubs: Mentorship programs for members, e.g., training plans for a 5 km race. Event organizers: Introduce categories offering discounts for beginners.

Source: Researcher's own compilation based on the result

Reference list

7. Publications on the Topic of the Dissertation:

- [1.]Akoglu, H. (2018). User's guide to correlation coefficients. Turkish journal of emergency medicine, 18(3), 91-93.
- [2.]Beaton, A. A., & Funk, D. C. (2008). An evaluation of theoretical frameworks for studying physically active leisure. Leisure Sciences, 30(1), 53-70.
- [3.]Beaton, A. A., Funk, D. C., Ridinger, L., & Jordan, J. (2011). Sport involvement: A conceptual and empirical analysis. Sport management review, 14(2), 126-140.
- [4.]Berki, T., & Pikó, B. (2020). A sportolói identitás és a sport-elköteleződés összefüggései serdülő sportolók körében. Neveléstudomány| Oktatás–Kutatás–Innováció, 8(3), 18-31.
- [5.]Bíró M. (2018): Bevezetés a sportpedagógiába In: Münnich, Ákos (szerk.) Fejezetek a Sport-pszichodiagnosztika és Tanácsadás témaköreiből. Debrecen, Magyarország: Debreceni Egyetem Bölcsészettudományi Kar Pszichológiai Intézet.
- [6.]Casper, J. (2007). Sport commitment, participation frequency and purchase intention segmentation based on age, gender, income and skill level with US tennis participants. European Sport Management Quarterly, 7(3), 269-282.
- [7.]Dumith, S. C., Gigante, D. P., Domingues, M. R., & Kohl III, H. W. (2011). Physical activity change during adolescence: a systematic review and a pooled analysis. International journal of epidemiology, 40(3), 685-698.
- [8.]Fernandes, N., Correia, A., Abreu, A. M., & Biscaia, R. (2013). Relationship between sport commitment and sport consumer behavior. Motricidade, 9(4), 2-11.
- [9.]Funk, D., Jordan, J., Ridinger, L., & Kaplanidou, K. (2011). Capacity of mass participant sport events for the development of activity commitment and future exercise intention. Leisure Sciences, 33(3), 250-268.
- [10.] Godbey, G. C., Caldwell, L. L., Floyd, M., & Payne, L. L. (2005). Contributions of leisure studies and recreation and park management research to the active living agenda. American journal of preventive medicine, 28(2), 150-158.
- [11.] Gratton, C. (2004). Sport, health and economic benefit. Driving up participation: the challenge for sport, 61-67.
- [12.] Gyulavári T. - Mitev A. Z. - Neulinger Á. - Neumann-Bódi E. - Simon J. - Szűcs K. (2017). A marketingkutatás alapjai. Akadémiai Kiadó. Letöltve:

- [13.] Hallmann, K., & Breuer, C. (2010). Image fit between sport events and their hosting destinations from an active sport tourist perspective and its impact on future behavior. *Journal Of Sport & Tourism*, 15(3), 215-237.
- [14.] Kinczel A. – Müller A. (2020): AKTIVÍTÁS, SZABADIDŐSPORT. KÜLÖNLEGES BÁNÁSMÓD 6 : 2 pp. 49-58. , 10 p. (2020)
- [15.] Kinczel, A., & Müller, A. É. (2022). Study on travel habits and leisure activities in the light of COVID-19 triggered changes in Romania and Hungary.
- [16.] Kozma, G., Bács, Z., & Perényi, S. (2015). Különbségek és hasonlóságok a sportban való részvételben: Régiók és települések szerinti elemzés Magyarország és az Európai Unió esetében. *Journal of Physical Education and Sport* , 15 (3), 551.
- [17.] László, B. T. (2020). A sport-elköteleződés modell összefüggéseinek vizsgálata serdülő sportolók körében (Doctoral dissertation, Szeged University (Hungary)).
- [18.] Lindström, M., Hanson, B. S., & Östergren, P. O. (2001). Socioeconomic differences in leisure-time physical activity: the role of social participation and social capital in shaping health related behaviour. *Social science & medicine*, 52(3), 441-451.
- [19.] Malchrowicz-Moško, E., & Poczta, J. (2018). Running as a form of therapy socio-psychological functions of mass running events for men and women. *International Journal of Environmental Research and Public Health*, 15(10), 2262.
- [20.] Müller A. - Bácsné, Bába É. – Gabnai Z. - Pfau C. - Pető K. (2019a): A fitnesztrendek és új típusú mozgásformák társadalmi és gazdasági aspektusai. *ACTA CAROLUS ROBERTUS* 9 : 2 pp. 109-122. , 14 p.
- [21.] Myburgh, E. (2017). A framework fostering commitment for endurance sport tourism in South Africa (Doctoral dissertation, North-West University (South Africa), Potchefstroom Campus).
- [22.] O'Neil, J.W. & Steyn, B.J. (2007): Strategies used by South African non-elite athletes to cope with the environmental stressors associated with endurance events. *South African journal for research in sport, physical education and recreation*, 29(2):99-107.
- [23.] Oliveira-Brochado, A., Brito, P. Q., & Oliveira-Brochado, F. (2017). Correlates of adults' participation in sport and frequency of sport. *Science & Sports*, 32(6), 355-363.
- [24.] Osborne, J.W. & Costello, A.B. 2009. Best practices in exploratory factor analysis: four recommendations for getting the most from your analysis. *Pan-Pacific*

management review, 12(2):131-146

- [25.] Paic R. - Kajos A. - Meszler B. - Prisztóka Gy. (2018): A magyar nyelvű sportmotivációs skála (H-SMS) validációja és eredményei. Magyar Pszichológiai Szemle. 73(2), pp. 159–182.
- [26.] Pallant, J. (2007). SPSS survival manual: A step by step guide to data analysis using SPSS for Windows.
- [27.] Perényi, S. (2015). Hungary: The popularisation and expansion of amateur running culture. In Running across Europe: The rise and size of one of the largest sport markets (pp. 163-186). London: Palgrave Macmillan UK.
- [28.] Piggan, J. (2015). Designed to move? Physical activity lobbying and the politics of productivity. Health education journal, 74(1), 16-27.
- [29.] Rauter, S. (2014): Mass sports events as a way of life differences between the participants in a cycling and a running event. Kinesiologia Slovenica, 20(1):5-15.
- [30.] Scanlan, T. K., Carpenter, P. J., Simons, J. P., Schmidt, G. W., & Keeler, B. (1993). An introduction to the sport commitment model. *Journal of sport and exercise psychology*, 15(1), 1-15.
- [31.] Scanlan, T. K., Russell, D. G., Beals, K. P., & Scanlan, L. A. (2003). Project on elite athlete commitment (PEAK): II. A direct test and expansion of the sport commitment model with elite amateur sportsmen. *Journal of sport and exercise psychology*, 25(3), 377-401.
- [32.] Schnell, A., Mayer, J., Diehl, K., Zipfel, S., & Thiel, A. (2014). Giving everything for athletic success!—Sports-specific risk acceptance of elite adolescent athletes. *Psychology of sport and exercise*, 15(2), 165-172.
- [33.] Shipway, R. & Jones, I. (2007): Running away from home: understanding visitor experiences and behaviour at sport tourism events. *International journal of tourism research*, 9(5):373- 383.
- [34.] Snethen, J.A. & Broome, M.E. (2007): Weight, exercise, and health children's perceptions. *Clinical nursing research*, 16(2):138-152
- [35.] Stevinson, C., & Hickson, M. (2014). Exploring the public health potential of a mass community participation event. *Journal of public health*, 36(2), 268-274.
- [36.] Szemes, Á., Harsányi, S. G., & Tóth, L. (2016). Különböző sportágakban versenyző sportolók sportmotivációjának és flow élményének összehasonlító vizsgálata. *Testnevelés, sport, tudomány*, 1(1), 80-90.
- [37.] Szüle B. (2019): Klaszterszám-meghatározási módszerek összehasonlítása.

Statisztikai Szemle. 97(5), pp. 421-438.

- [38.] Taniguchi, H., & Shupe, F. L. (2014). Gender and family status differences in leisure-time sports/fitness participation. *International Review for the Sociology of Sport*, 49(1), 65-84.
- [39.] Telama, R. I. S. T. O., & Yang, X. (2000). Decline of physical activity from youth to young adulthood in Finland. *Medicine & Science in Sports & Exercise*, 32(9), 1617-1622.
- [40.] Ugoni, A., & Walker, B. F. (1995). The t test: an introduction. *COMSIG review*, 4(2), 37.
- [41.] Wheatley, D., & Bickerton, C. (2016). A munkába járás és a munkahelyi utazás időfelhasználásra és jólétre gyakorolt hatásai. *New Technology, Work and Employment*, 31 (3), 238-254.
- [42.] Wicker, P., Breuer, C., & Pawlowski, T. (2009). Promoting sport for all to age-specific target groups: The impact of sport infrastructure. *European sport management quarterly*, 9(2), 103-118.
- [43.] Wilhelm Stanis, S.A., Schneider, I.E. & Russell, K.C. 2009. Leisure time physical activity of park visitors: retesting constraint models in adoption and maintenance stages. *Leisure sciences*, 31(3):287-304.

Internetes hivatkozások

1. **EUROBAROMETER (2024):** <https://europa.eu/eurobarometer/screen/home>
letöltés: 2024. 12. 10.
2. **GOV:UK (2025):** <https://www.gov.uk/government/publications/get-active-a-strategy-for-the-future-of-sport-and-physical-activity/get-active-a-strategy-for-the-future-of-sport-and-physical-activity> letöltés: 2025. 07.05.

Publications in international scientific journals:

1. Maklari, G., Baba, E. B., Muller, A., & Molnar, A. (2024). Exploration of gender patterns and differences in endurance sports event tourism. *Geo Journal of Tourism and Geosites*, 56(4), 1617-1626.
2. Maklári, G.: Magyarországi állóképességi sportolók edzési és versenyzési szokásainak összehasonlítása nemek szerint, *Gradus 11: 3 Paper*: 2024.3.Art.002 , 8 p. (2024)
3. Maklári, G. (2022). Állóképességi sportrendezvények Magyarországon 2018-2019-ben. *Acta Carolus Robertus*, 12(2), 38-47.

4. Kinczel, A., Maklári, G., & Müller, A. (2020). Recreational activities and motivation among young people. *Geosport for society*, 12(1), 53-65.

5. Sipos, C., & Maklári, G. (2022). Analysis of the effectiveness of RFID Systems in triathlon.

Publications in Hungarian scientific journals:

1. Maklári, G., & Sipos, C. (2021). Használt és sportruházat ellátási lánc stratégiájának és mutatószámainak vizsgálata.

Abstract

1. Maklári G.: XIV. Táplálkozásmarketing Konferencia: Egészséges táplálkozás sportolás során. Debreceni Egyetem Gazdaságtudományi Kar, Marketing és kereskedelmi intézet, elhangzott előadás. Megjelenés: pp. 23. (2020)



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PhD Publication List

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List of publications related to the dissertation

Articles, studies (6)

1. **Maklári, G.**, Bácsné Bába, É., Müller, A. É., Molnár, A.: Exploration of gender patterns and differences in endurance sports event tourism.
Geojournal of Tourism and Geosites. 56 (4), 1617-1626, 2024. ISSN: 2065-0817.
DOI: <http://dx.doi.org/10.30892/gtg.56418-1332>
2. **Maklári, G.**: Magyarországi állóképességi sportolók edzési és versenyzési szokásainak összehasonlítása nemek szerint.
Gradus. 11 (3), 1-8, 2024. EISSN: 2064-8014.
DOI: <http://dx.doi.org/10.47833/2024.3.ART.002>
3. **Maklári, G.**: Állóképességi sportrendezvények Magyarországon 2018-2019-ben.
Acta Carolus Robertus. 12 (2), 38-47, 2022. ISSN: 2062-8269.
DOI: <http://dx.doi.org/10.33032/acr.2845>
4. Sipos, C., **Maklári, G.**: Analysis of the effectiveness of RFID Systems in triathlon.
GeoSport for Society. 17 (2), 75-88, 2022. ISSN: 2393-1353.
DOI: <http://dx.doi.org/10.30892/gss.1703-086>
5. Sipos, C., **Maklári, G.**: Használt és sportruházat ellátási lánc stratégiájának és mutatószámainak vizsgálata.
International Journal of Engineering and Management Sciences. 6 (1), 86-98, 2021. EISSN: 2498-700X.
DOI: <http://dx.doi.org/10.21791/IJEMS.2021.1.8>
6. Kinczel, A., **Maklári, G.**, Müller, A. É.: Recreational activities and motivation among young people.
Geosport for Society. 12 (1), 53-65, 2020. ISSN: 2393-1353.
DOI: <http://dx.doi.org/10.30892/gss.1206-059>





List of other publications

Articles, studies (5)

7. Szabó, K., Kinczel, A., Molnár, A., Hőnyi, D., **Maklári, G.**: Szabadidő eltöltési szokások, életminőség vizsgálata a Hajdú-Bihar megyében élő emberek körében.
In: Versenysport és szabadidősport. Szerk.: Balogh László, Debreceni Egyetem Sporttudományi Koordinációs Intézet, Debrecen, 26-36, 2021, (Válogatott tanulmányok a sporttudomány köréből, ISSN 2631-0910 ; 5) ISBN: 9789634902867
8. Hőnyi, D., Kinczel, A., Molnár, A., Szabó, K., **Maklári, G.**, Müller, A. É.: Szabadidő eltöltési szokások vizsgálata a fiatalok körében.
In: Versenysport és szabadidősport. Szerk.: Balogh László, Debreceni Egyetem Sporttudományi Koordinációs Intézet, Debrecen, 26-36, 2021, (Válogatott tanulmányok a sporttudomány köréből, ISSN 2631-0910 ; 5) ISBN: 9789634902867
9. Váczi, P., Herpainé Lakó, J., Varga, A., **Maklári, G.**, Müller, A. É.: The popularity of the university basketball championship.
Slovak Journal of Sport Science. 7 (2), 63-71, 2021. EISSN: 2453-9325.
DOI: <http://dx.doi.org/10.24040/sjss.2020.6.2.63-71>
10. Müller, A. É., Mészáros, A., Móri, K., Molnár, A., **Maklári, G.**, Hőnyi, D., Molnár, Z.: A hazai egészségturizmus népszerű desztinációi és attrakciói.
In: Trendek a versenysport és a szabadidősport területéről. Szerk.: Balogh László, Debreceni Egyetem Sporttudományi Koordinációs Intézet, Debrecen, 90-98, 2020, (Válogatott tanulmányok a sporttudomány köréből, ISSN 2631-0910 ; 4) ISBN: 9789634902218
11. Müller, A. É., Kerekes, F., Szabó, K., Molnár, A., Molnár, Z., Móri, K., Hőnyi, D., **Maklári, G.**, Laoues-Czimbalmos, N.: Edzőterembe járók sportolási szokásai és edzőterem választást befolyásoló tényező alakulása egy kutatás tükrében.
In: Trendek a versenysport és a szabadidősport területéről. Szerk.: Balogh László, Debreceni Egyetem Sporttudományi Koordinációs Intézet, Debrecen, 193-206, 2020, (Válogatott tanulmányok a sporttudomány köréből, ISSN 2631-0910 ; 4) ISBN: 9789634902218





Conference presentations (1)

12. **Maklári, G.:** Egészséges táplálkozás sportolás során.

In: XIV. Táplálkozásmarketing Konferencia: Új irányok a táplálkozásmarketingben : Merre tovább?: Összefoglalók, Gazdaságtudományi Kar, Debrecen, 23, 2020.

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