



## **SELF-REPORTED PHYSICAL ACTIVITY, ENJOYMENT AND WELL-BEING OF GREEK YOUTH BASKETBALL PLAYERS**

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### **Abstract:**

Children and adolescents' regular participation in sports can help them to increase their physical activity (PA) levels and fitness and to adopt healthy behaviors in adulthood. The purpose of this study was to examine the relationship of self-reported PA and enjoyment of youth basketball players with their well-being variables (self-rated health, self-esteem and subjective vitality). Participants were 208 male athletes (Mage: 13.88 ± 1.38 years), members of seven Greek basketball clubs, who voluntarily participated in this research. Data were collected prior to training with several valid and reliable questionnaires measuring PA, self-rated health, subjective vitality and self-esteem (Cronbach's  $\alpha = .66$  to  $.82$ ). The findings suggested that 71.5% of youth basketball players spend 6 to 7 days per week in moderate to vigorous PA (MVPA) and 73.1% of them reported spend 5 to 6 hours per week in MVPA. There was no significant effect of age on players' MVPA. Correlation analysis revealed that MVPA and enjoyment were positively related to players' self-reported health, subjective vitality and self-esteem. Findings also revealed a direct effect of sport-related enjoyment on players' self-rated health, self-esteem and subjective vitality, but not on their PA levels. Based on the above, it can be assumed that regular participation of children and adolescents in basketball training may contribute to increase or maintain their PA levels, to meet World Health Organization (WHO) recommendations for PA and to improve their quality of life.

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## 1. Introduction

It is well documented that children and adolescents' regular participation in sports can help them to increase their levels of PA (e.g., Hebert, Møller, Andersen, & Wedderkopp, 2015; Kokko, Martin, Geidne, Van Hoya et al., 2019; Wickel & Eisenmann, 2007) and fitness (e.g., Ara, Vicente-Rodríguez, Jimenez-Ramirez, Dorado, Serrano-Sanchez, & Calbet, 2004; Hoffman, Kang, Faigenbaum, & Ratamess, 2005). Additionally, youths' regular participation in sports can reduce childhood obesity (e.g., Ara et al., 2004), to improve their mental health (e.g., Schumacher Dimech & Seiler, 2011; Eime, Young, Harvey, Charity, & Payne, 2013), to help them learn life skills (e.g., Goudas, 2010; Gould & Carson, 2008) and to adopt healthy behaviours in adulthood (e.g., Kjønnsen, Anderssen, & Wold, 2009). On the other hand, participation in competitive sports and early sports specialization might link with severe injuries (e.g., Cuff, Loud, & O' Riordan, 2010; Habelt, Hasler, Steinbrück, & Majewski, 2011), doping (e.g., Greydanus & Patel, 2002), eating disorders (e.g., Fietz, Touyz, & Hay, 2014) and alcohol consumption (Lisha & Sussman, 2010). These negative aspects of sports might lead children and adolescents to early drop-out of sports and withdrawal from regular physical activity.

Nowadays, the vast majority of children and adolescents are physically inactive (Guthold, Stevens, Riley, & Bull, 2020) and do not meet WHO's PA recommendations "*to accumulate at least 60 minutes of MVPA daily*" (WHO, 2010; p. 7). Therefore, it is very important to investigate the contribution of sport participation on youths' PA levels. One of the most popular team sports between children and adolescents worldwide is basketball (e.g., DiFiori, Güllich, Brenner, Côté, Hainline, Ryan, & Malina, 2018). To our knowledge, there is a small number of studies that have examined so far the contribution of basketball on youths' PA levels (e.g., Guagliano, Lonsdale, Kolt, Rosenkratz, & George, 2015; Hebert, Møller, Andersen, & Wedderkopp, 2015). Additionally, few studies have found no significant differences in MVPA between basketball players and non-players (Reich, Rehtik, Miklánková, & Prukner, 2016) or that sports participation does not contribute to meet youth WHO's PA recommendations (Leek, Carlson, Cain, Henrichon et al., 2011).

Sport-related enjoyment, which is referred to the feeling of pleasure or fun during sports participation (e.g., Scanlan, Carpenter, Lobel, & Simons, 1993), appears to be one of the most important reasons for promoting youths participation in PA and sports (e.g., Fenton, Duda, Appleton, & Barrett, 2017; Karatrantou, Stavrou, Hasioti, Varveri, Krommidas, & Gerodimos, 2019; McCarthy, Jones, & Clark-Carter, 2008) and in basketball (e.g., DiFiori et al., 2018). Moreover, lower levels of enjoyment have been linked to higher rates of sport dropout (Crane & Temple, 2015). Therefore, it is very important to investigate the role of enjoyment in young athletes' PA and well-being. To

our knowledge, no previous study has examined the role of enjoyment in youth basketball players' well-being.

Based on the above, the purpose of this study was to examine the relationship of self-reported physical activity (PA) and enjoyment of youth basketball players with their well-being (self-rated health, self-esteem, subjective vitality). The hypotheses that lead this study are the following: 1) The vast majority of the youth basketball players' will meet WHO's recommendations for daily participation in 60 minutes of MVPA, 2) There will be no significant changes in players' MVPA between different age groups due to their participation in basketball training, 3) Players' enjoyment in basketball will significantly predict their PA levels and well-being.

## 2. Method

### 2.1. Participants

Participants were 208 male players ( $M_{\text{age}}$ :  $13.88 \pm 1.38$  years, sports experience:  $3.16 \pm 2.07$  years) members of seven Greek basketball clubs, who voluntarily participated in this research.

### 2.2. Instruments

Participants completed the following questionnaires:

#### A. Out-of-school Physical Activity

Two items measuring the frequency and the total amount of time (hours) spent in out-of-school moderate to vigorous intensity physical activity (MVPA) was used (Booth, Okely, Chey, & Bauman, 2001). More specifically, participants' frequency of MVPA was captured with the following item: "*Outside school hours: How often do you usually exercise in your free time, so much that you get out of breath or sweat?*". Their responses were given on a 5-point Likert scale ranged from 1 (Once a month or less) to 5 (Every day). While, participants' amount of time spent in MVPA was captured with the following item: "*Outside school hours: How many hours do you usually exercise in your free time, so much that you get out of breath or sweat?*". Their answers were given on a 6-point Likert scale ranged from 1 (Never) to 6 (About 7 hours per week).

#### B. Sport-related enjoyment

A subscale of McAuley, Duncan, and Tammen (1989) was used in order to measure children's enjoyment/ fun in basketball. This scale consisted of 4 items (e.g., "*Over the past 3-4 weeks ... I enjoyed the activities in basketball*" or "*I found basketball interesting*"). Players' answers were given on a 5-point Likert scale ranged from 1 (Strongly disagree) to 5 (Strongly agree). This subscale has been used in a significant number of studies in the fields of youth sports and physical education (e.g., Goudas & Hassandra, 2006; Karatrantou et al., 2019; Krommidas, Galanis, Papaioannou, Tzioumaki et al., 2016; Papacharisis & Goudas, 2003).

### **C. Self-rated health**

An item related to participants' health status was used based on World Health Organization and Health Behavior in School-aged Children study (e.g., Currie, Roberts, Morgan, Smith, Settertobulte, Samdal, & Barnekow Rasmunssen, 2004; Richter, Erhart, Vereecken, Zambon, Boyce, & Gabhainn, 2009). The item was: *"Would you say your health is..."* and the answers were given on a 4-point Likert scale ranged from 1 (My health is poor) to 4 (My health is very good). This item has been widely used in previous studies with children and adolescents in order to examine their health status (e.g., Kokkevi, Stavrou, Kanavou, & Fotiou, 2014; Krommidas et al., 2016).

### **D. Self-esteem**

A short version of the *"Physical Self-Description Questionnaire"* (Marsh, Martin, & Jackson, 2010) for measuring the general self-esteem of participants was used. The questionnaire consisted of 5 items (e.g., *"Over the past 3-4 weeks ... Overall, I had a lot to be proud of"* or *"Most of the things I did, I did well"*). Participants' answers were given on a 5-point Likert scale ranged from 1 (Strongly disagree) to 5 (Strongly agree). This scale has been also successfully used in previous studies with youths (e.g., Papaioannou, Appleton, Torregrosa, Jowett et al., 2013).

### **E. Subjective vitality**

A scale measuring participants' feelings of energy and vitality over the past 3-4 weeks was used (Ryan & Frederick, 1997). The scale consisted of 5 items (e.g., *"Over the past 3-4 weeks ... I felt I had a lot of energy"*). All items were scored on a 5-point Likert scale ranging from 1 (Strongly disagree) to 5 (Strongly agree). This scale has been also widely used in previous studies with young athletes (e.g., Krommidas et al., 2016; Papaioannou et al., 2013).

## **2.3. Procedure**

The study was approved by the Bioethics Committee of the School of Physical Education & Sport Science, University of Thessaly (Ref. Number: 936/ 10/12/2015). A consent form was also signed by the young players, their parents, and their coaches. A researcher from the University of Thessaly prior to a basketball training session, asked the participants to fill in several valid and reliable questionnaires measuring their PA, subjective health, anxiety, subjective vitality and self-esteem. Participants were informed by the researcher that their responses would remain anonymous and that they could withdraw from this study at any time they wished.

## **2.4. Statistical Analysis**

Confirmatory Factor Analysis (CFA) was conducted in order to examine factorial validity for each questionnaire. The method of Maximum Likelihood Estimation was used to estimate the parameters of each model in CFA. The Goodness-of-Fit Indices of chi-square ( $\chi^2$ ), Tucker-Lewis Index (TLI), Comparative Fit Index (CFI) and Root Mean Square Error of Approximation (RMSEA) were used for the examination of each model (e.g., Cheung & Rensvold, 2002; Hu & Bentler, 1999; Marsh, Balla, & Hau, 1996).

Then, descriptive statistics (means, standard deviations), Cronbach's  $\alpha$  for measuring scales' internal consistency reliability (Cronbach, 1951) and correlation analysis were calculated. One way multivariate analysis of variance (MANOVA) was also conducted in order to examine the age effect on players' MVPA (days and hours per week).

Finally, Structural Equation Modeling (SEM) was used to examine if youths' enjoyment in basketball predicts directly their PA levels and well-being variables. Four models were calculated. Across all models, we created one exogenous latent variable, players' enjoyment in basketball. Then, for each model we created one endogenous latent variable capturing self-rated health, self-esteem, subjective vitality and MVPA respectively (Figures 1 to 4). Maximum Likelihood Estimation and the Goodness-of-Fit Indices (GFIs) mentioned above for the CFAs were also used here to estimate the parameters of each model.

All the above statistical analyses were conducted by using the PASW Statistics software (IBM; version 18.0 for Windows) and AMOS statistical software (IBM; version 20.0). The level of significance was set at  $p < .05$ .

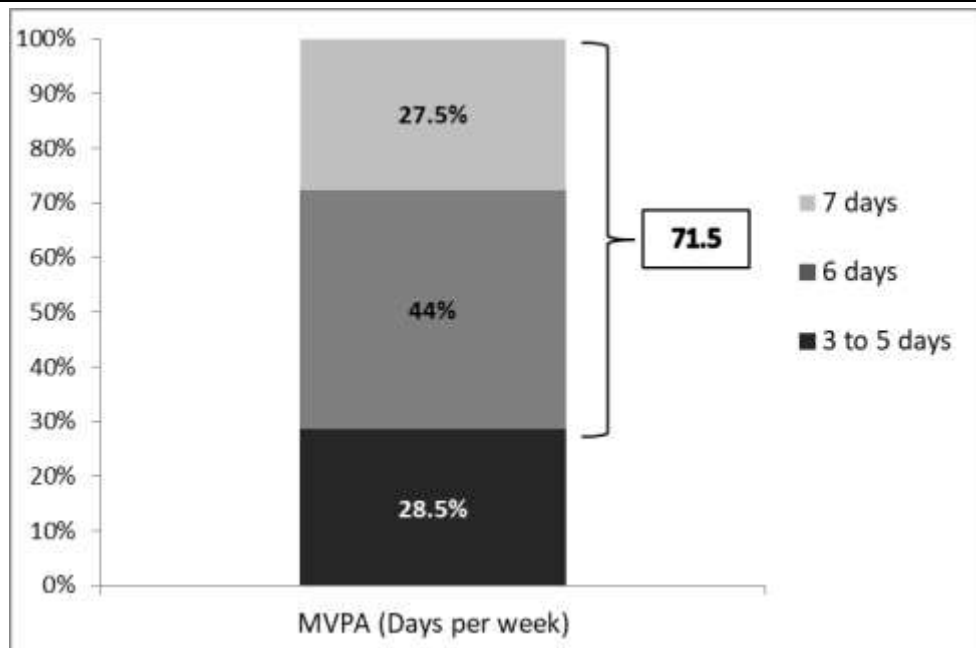
### 3. Results

#### 3.1. Confirmatory factor analysis

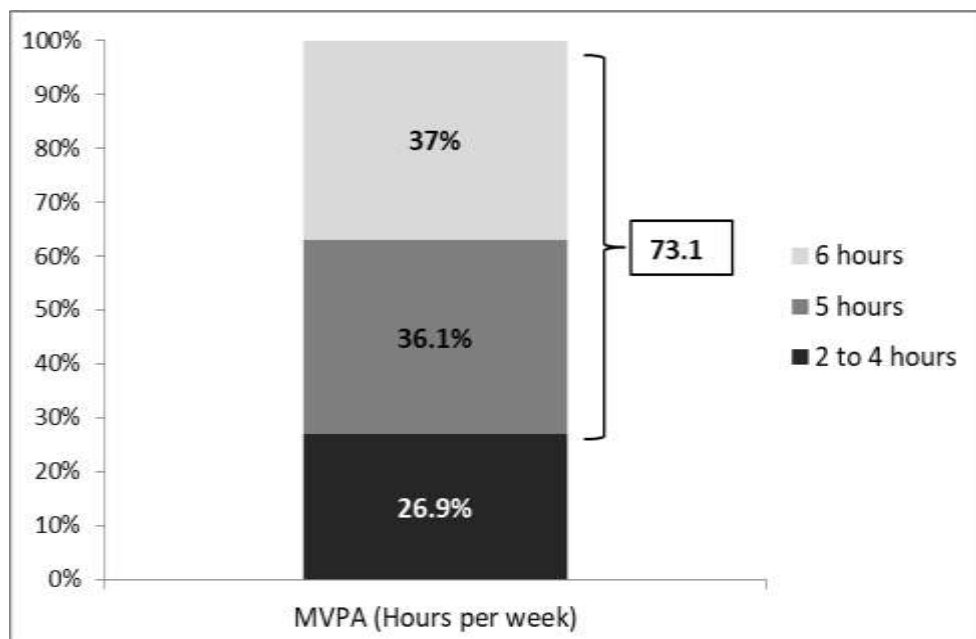
CFA of the Enjoyment scale revealed acceptable goodness-of-fit indices:  $\chi^2(2) = 4.81$ , TLI = .97, CFI = .99, RMSEA = .08, RMSEA 90% CI = .00 - .18. The factor loadings (4 items) ranged from .63 to .79. In addition, CFA of the Self-esteem scale revealed acceptable goodness-of-fit indices:  $\chi^2(5) = 10.33$ , TLI = .92, CFI = .96, RMSEA = .07, RMSEA 90% CI = .00 - .14. The factor loadings (5 items) ranged from .35 to .75. Finally, CFA of the Subjective Vitality scale revealed acceptable goodness-of-fit indices:  $\chi^2(4) = 13.52$ , TLI = .93, CFI = .97, RMSEA = .11, RMSEA 90% CI = .05 - .18. The factor loadings (5 items) ranged from .58 to .87.

#### 3.2. Descriptive statistics, reliability and correlation analyses

The percentage of youth basketball players who reported spending 6 to 7 days per week in MVPA was 71.5% (Figure 1), while the percentage of players who reported spending 5 to 6 hours per week in MVPA was 73.1% (Figure 2).



**Figure 1:** Days per week in Moderate to Vigorous Physical Activity (MVPA; % of players)



**Figure 2:** Hours per week in Moderate to Vigorous Physical Activity (MVPA; % of players)

Descriptive statistics (means and standard deviations), Cronbach's alpha for measuring scales' internal consistency reliability and correlation analysis are presented below in Table 1. Results from reliability analysis indicated acceptable internal consistency ( $\alpha = .66 - .82$ ).

**Table 1:** Descriptive statistics, reliability and correlation analyses of the examined variables

Variables	M ± SD	alpha	1	2	3	4	5	6
1. MVPA (Days)	5.97 ± .79	-	-					
2. MVPA (Hours)	5.08 ± .86	-	.50***	-				
3. Enjoyment	4.25 ± .74	.82	.12	.15*	-			
4. Health	3.59 ± .57	-	.14*	.18*	.18*	-		
5. Self-esteem	3.79 ± .57	.66	.09	.16*	.38***	.31***	-	
6. Vitality	3.80 ± .71	.81	.22**	.26***	.52***	.13	.43***	-

**Notes:** MVPA = Moderate to Vigorous Physical Activity; M = Mean; SD = Standard Deviation; alpha = Reliability; \*\*\*  $p < .001$ ; \*\*  $p < .01$ ; \*  $p < .05$

### 3.3. Age effect on youth players' MVPA

Then, in order to examine age effect on players' MVPA, participants were splitted into three age groups. One-way multivariate analysis of variance (MANOVA) revealed no significant effect of age on players' participation in MVPA (Wilks'  $\lambda = .990$ ,  $F_{4,406} = .535$ ,  $p = .710$ ; Table 2).

**Table 2:** Descriptive statistics of players' MVPA between age groups (no significant differences)

Variables	Age Group	M	SD	N
MVPA (Days per week)	11 to 12 years old	5.92	.81	39
	13 to 14 years old	5.97	.76	96
	15 to 16 years old	6.00	.84	72
	Total	5.97	.79	207
MVPA (Hours per week)	11 to 12 years old	5.10	.75	39
	13 to 14 years old	5.00	.86	97
	15 to 16 years old	5.17	.90	72
	Total	5.08	.86	208

**Notes:** M = Means; SD = Standard Deviations; N = Number of participants

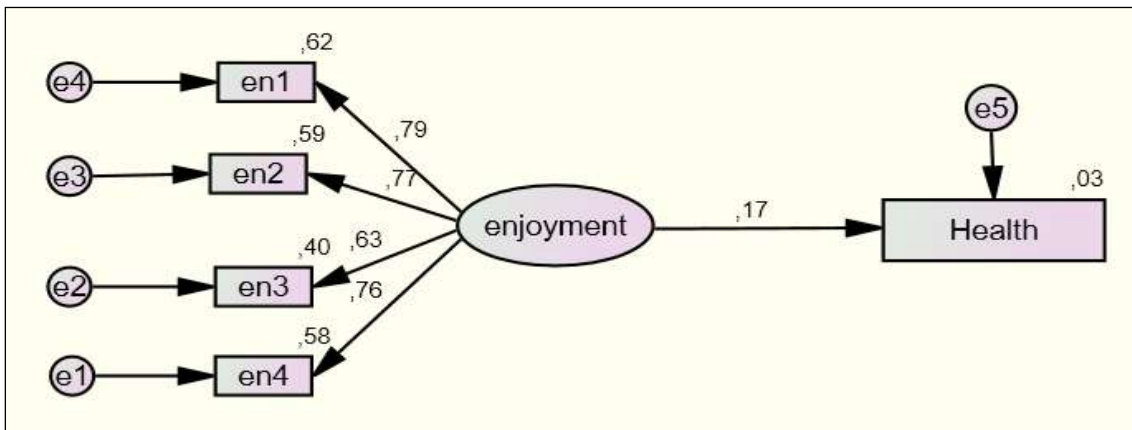
### 3.4. Structural Equation Modelling

GFI for Models 1, 2, 3 and 4, having enjoyment as an exogenous latent variable, appear in Table 3. Across all models, the effect of sport-related enjoyment on self-rated health, self-esteem and subjective vitality was significant (Figures 1 to 3). On the contrary, the effect of enjoyment on players' MVPA was not significant (Figure 4). These findings imply that sport-related enjoyment had a direct effect on youths' well-being variables.

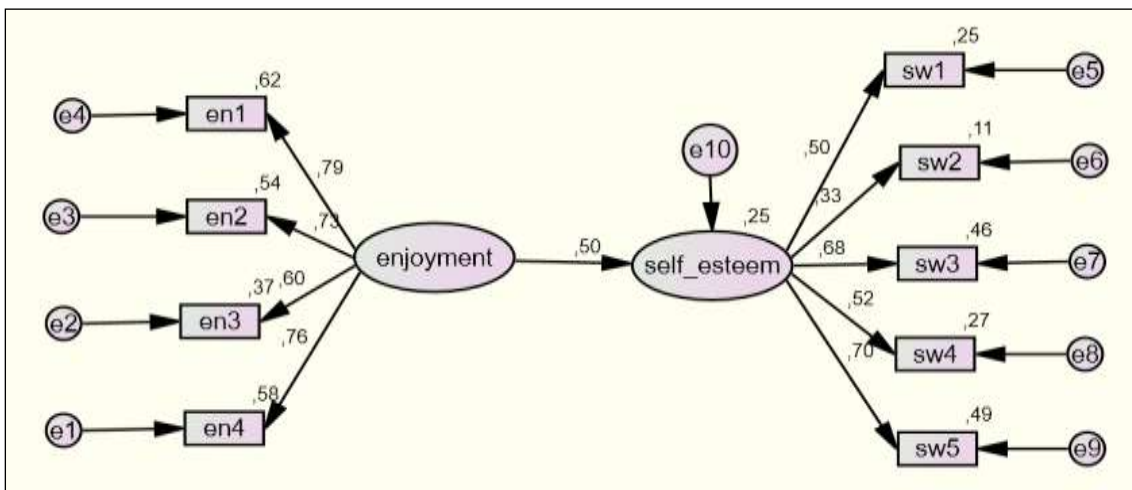
**Table 3:** Goodness-of-fit Indices of Models 1, 2, 3 and 4

Model	Endogenous variable	$\chi^2$	df	$\chi^2/df$	TLI	CFI	RMSEA
4	Health	17.00	5	3.4	.92	.96	.11
5	Self-esteem	47.39	26	1.82	.93	.95	.07
6	Vitality	65.67	26	2.53	.92	.94	.09
7	MVPA	9.70	8	1.21	.99	.99	.03

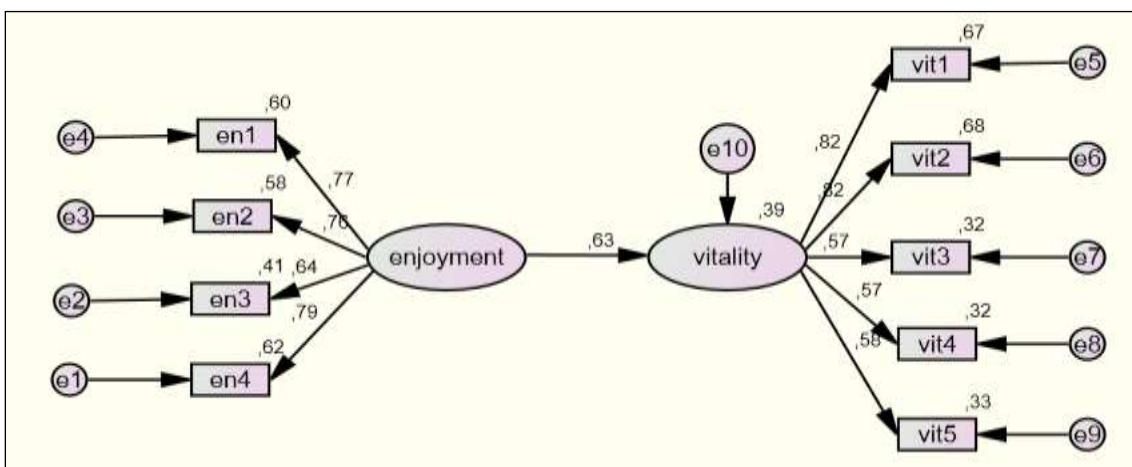
**Notes:** MVPA = Moderate to Vigorous Physical Activity



**Figure 1:** Coefficients in arrows indicate standardized beta weights  
 (For Model 1:  $\beta = .17, p < .05$ )

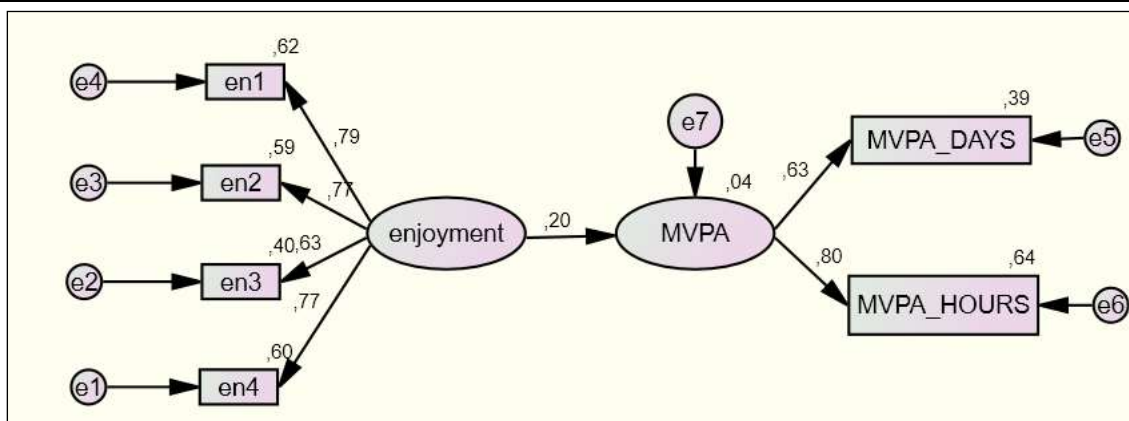


**Figure 2:** Coefficients in arrows indicate standardized beta weights  
 (For Model 2:  $\beta = .50, p < .001$ )



**Figure 3:** Coefficients in arrows indicate standardized beta weights  
 (For Model 3:  $\beta = .63, p < .001$ )





**Figure 4:** Coefficients in arrows indicate standardized beta weights  
 (For Model 4:  $\beta = .20$ ,  $p = .10$ ; MVPA = Moderate to Vigorous Physical Activity)

#### 4. Discussion

The purpose of this study was to examine the relationship of self-reported PA and enjoyment of youth basketball players with their well-being (self-rated health, self-esteem and subjective vitality). A high percentage of youth basketball players (71.5%) reported they are spending 6 to 7 days per week in MVPA. Based on this finding, it can be concluded that the vast majority of youths who participate in basketball training meet the WHO’s PA recommendations for “at least 60 minutes of MVPA daily” (WHO, 2010; p. 7). This finding is in line with previous studies that found high levels of PA in youths who participate in organized sports (e.g., Hebert et al., 2015; Kokko et al., 2019; Wold, Duda, Balaguer, Smith, et al., 2013).

Findings regarding age effect revealed no significant changes in youths’ PA levels between different age groups. A rational explanation for this could be their regular participation in basketball training. However, this finding is not aligned with a large number of studies found that youths’ PA levels are dramatically reduced as they are growing up (e.g., Biddle, Gorely, & Stensel, 2004; Dumith, Gigante, Domingues, & Kohl, 2011). The findings of the present stressed that basketball training may contribute to maintaining youths’ PA levels.

Findings from correlation analysis revealed that MVPA and enjoyment were positively related to youths’ self-reported health, subjective vitality, and self-esteem. On the contrary, youths’ MVPA (days per week) was not related to their enjoyment. This result is not aligned with other studies that found a significant relationship between youths’ PA levels and sport-related enjoyment (e.g., Fenton et al., 2017; Lagestad & Sørensen, 2018). Since enjoyment is one of the most crucial factors for promoting children and adolescents’ participation in organized sports (e.g., DiFiori et al., 2018; Fenton et al., 2017; Karatrantou et al., 2019), basketball coaches should be informed that their athletes did not enjoy the practice and thus they should focus on including activities and adopt behaviors that promote their athletes’ enjoyment. More specifically, coaches should be aware that they could create an enjoyable training environment by using a variety of

different exercises, teaching approaches, and positive feedback. Additionally, the adoption of strategies such as the avoidance of social comparison between youths' and promotion of personal improvement, the reduction of youths' sport-related anxiety and the creation of an "*empowering climate*" that would emphasize players' autonomy (to enable them to have "*voice and choice*" during training), personal improvement and learning may promote youths' enjoyment (e.g. Cheon, Reeve, Lee, & Lee, 2015; Duda & Appleton, 2016; Duda, Quested, Haug, Samdal, et al., 2013; Harwood, Barker, & Anderson, 2015; Smith, Smoll, & Cumming, 2007).

Finally, findings from SEM revealed a direct effect of sport-related enjoyment on players' self-rated health, self-esteem, and subjective vitality. Similar findings were also reported by Gagné, Ryan and Bargman (2003) who found that intrinsic motivation, which refers to the fact that one participates in a sport only for the fun or pleasure he/ she feels, predicted significantly young athletes' well-being. On the contrary, sport-related enjoyment was not a significant predictor of players' PA levels. This result is not in line with previous studies who found that enjoyment has a direct effect or plays a mediating role on young athletes' PA levels (e.g., Fenton et al., 2017; Gagne et al., 2003). A rational explanation for this finding could be that the participants of previous studies belong to different sports (e.g., soccer or female gymnasts vs basketball players) or age groups. The previous studies used also different methods to capture participants' PA levels (e.g., accelerometers) compared to the present study (self-report measures).

## 5. Conclusion

Based on the above, it appears that the regular participation of children and adolescents in basketball may contribute to increase or maintain their PA levels, to meet World Health Organization (WHO) recommendations for PA and to improve their quality of life. Particularly, enjoyment during training should be the focus of basketball coaches because it is linked with their players' well-being. A limitation of this study might be the self-report measures we used to assess youths' PA levels. This kind of self-referred instruments often underestimates or overestimates children and adolescents' PA levels mainly due to recall errors (e.g., Biddle, Gorely, Pearson, & Bull, 2011). Future studies it is important to use more reliable and valid methods to capture young basketball players' PA levels such as accelerometers or pedometers. By using motion sensors, researchers might be able to compare precisely the contribution of basketball training in youths' daily PA. Moreover, future researchers can examine other well-being variables of youth basketball players such as sport-related anxiety or use other well-being scales such as *Cantril's life satisfaction ladder* (Cantril, 1965) or the *Positive and Negative Affect Scale* (PANAS; Watson, Clark, & Tellegen, 1988) or the *Scale of Positive and Negative Experience* (Diener, Wirtz, Tov, Kim-Prieto et al., 2010). In conclusion, regular sports participation, and particularly basketball training, appears to be a cost-free and no side effect "*pill*" on children and adolescents' health.

### Conflict of Interest

The authors declare that there are no conflicts of interest.

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