European Journal of Physical Education and Sport Science
ISSN: 2501 - 1235
ISSN-L: 2501 - 1235
Available on-line at: www.oapub.org/edu

doi: 10.5281/zenodo.3762671 Volume 6 | Issue 3 | 2020

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

Charalampos Krommidas[1i],
Stefanos Perkos[2],
Ioannis Syrmpas[1],
Georgios S. Gorozidis[1],
Omiros Vlahos[1],
Evangelos Brisimis[1],
Georgios Loules[1]
[1]University of Thessaly, Trikala, Greece
[2]Aristotle University of Thessaloniki, Serres, Greece

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 α = .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.

[i] Correspondence: email hkrom@uth.gr

Keywords: moderate to vigorous physical activity, enjoyment, well-being, youth, basketball

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 Hoye et al., 2019; Wickel & Eisenmann, 2007) and fitness (e.g., Ara, Vicente-Rodrıíguez, 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., Kjønniksen, 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, Rechtik, 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_{age}: 13.88 ± 1.38 years, sports experience: 3.16 ± 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, Tzioumakis 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 (χ^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 α 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).

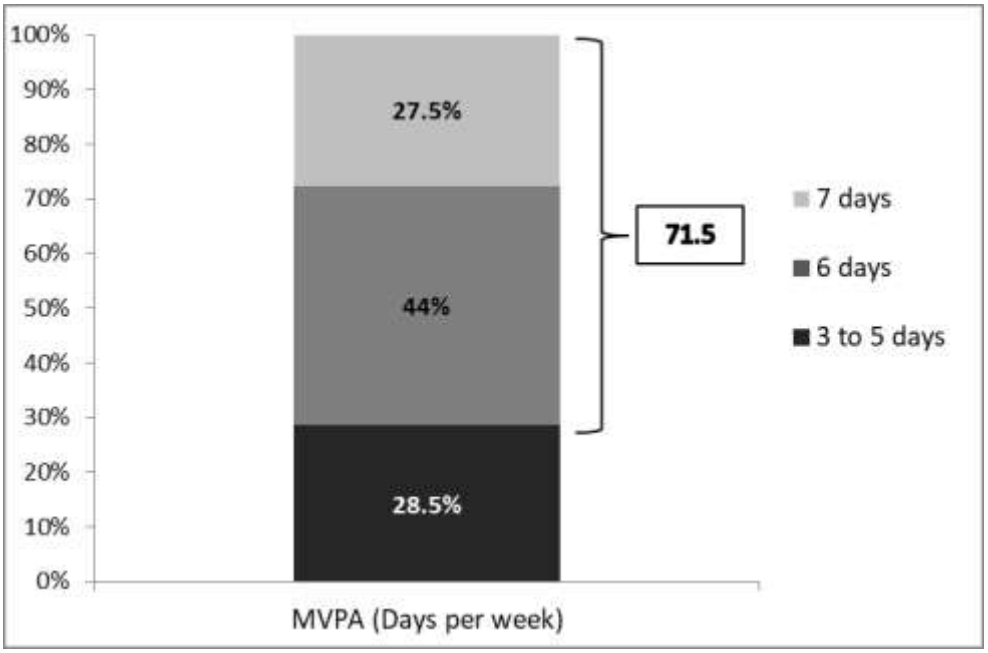

Figure 1: Days per week in Moderate to Vigorous Physical Activity (MVPA; % of players)

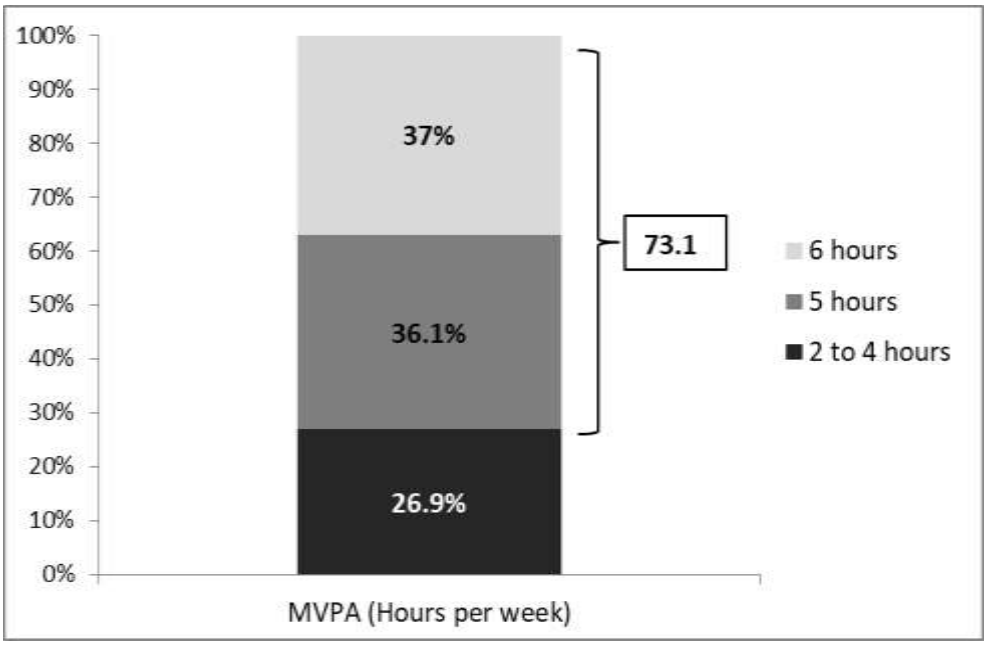

Figure 2: Hours per week in Moderate to Vigorous Physical Activity (MVPA; % of players)

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 (α = .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

GFIs 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	χ^2	df	χ^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

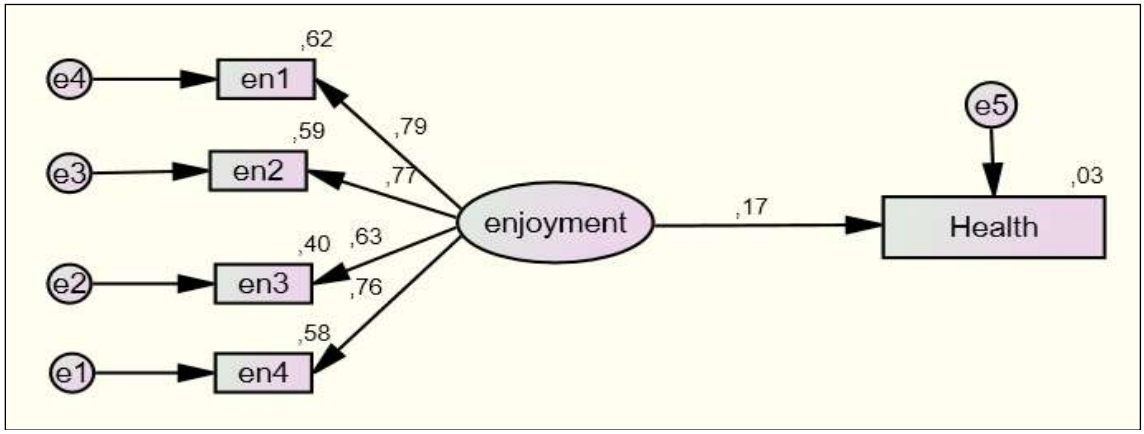

Figure 1: Coefficients in arrows indicate standardized beta weights
(For Model 1: $\beta = .17$, $p < .05$)

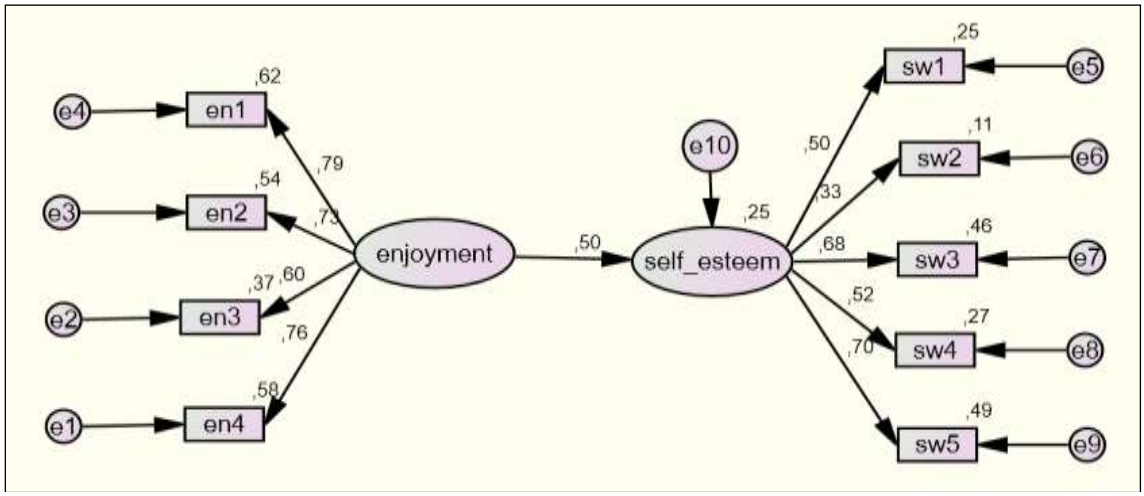

Figure 2: Coefficients in arrows indicate standardized beta weights
(For Model 2: $\beta = .50$, $p < .001$)

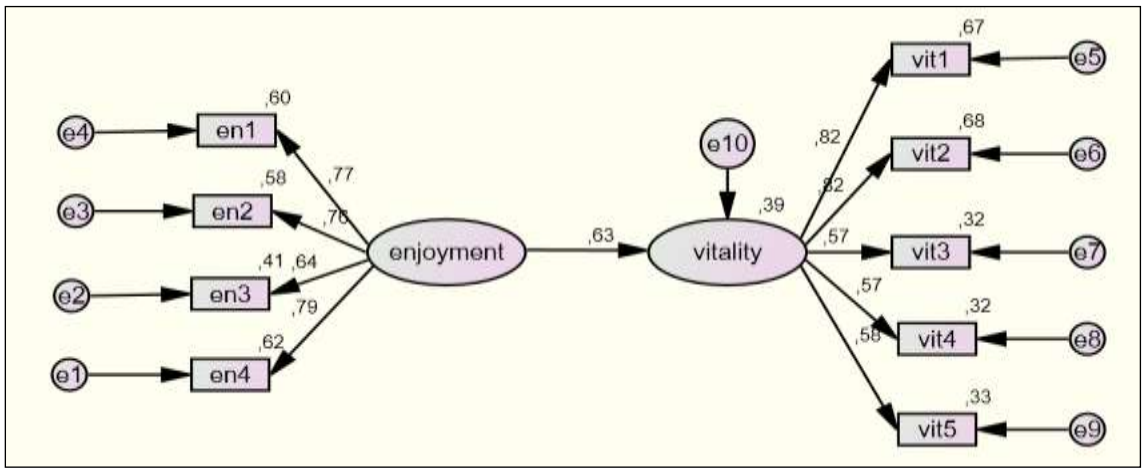

Figure 3: Coefficients in arrows indicate standardized beta weights
(For Model 3: $\beta = .63$, $p < .001$)

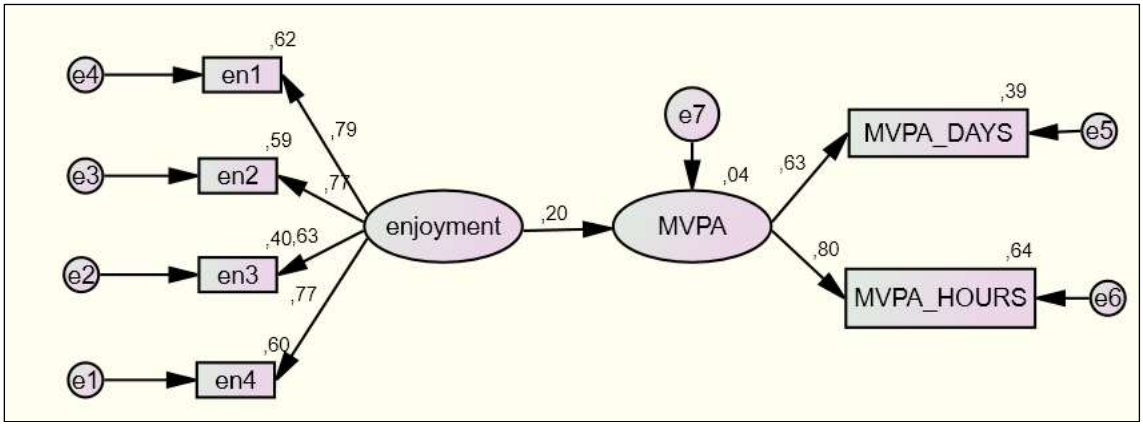

Figure 4: Coefficients in arrows indicate standardized beta weights
(For Model 4: β = .20, p = .10; MVPA = Moderate to Vigorous Physical Activity)

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.

About the Authors

Charalampos Krommidas, Ph.D., is with the Dept. of Physical Education & Sport Science, University of Thessaly, Trikala, Greece, e-mail: hkrom@pe.uth.gr
Stefanos Perkos, Ph.D., is with the Dept. of Physical Education & Sport Science, Aristotle University of Thessaloniki, Serres, Greece, e-mail: sperkos@phed-sr.auth.gr
Ioannis Syrmpas, PhD, is with the Dept. of Physical Education & Sport Science, University of Thessaly, Trikala, Greece, e-mail: jsyrmpas@gmail.com
Georgios S. Gorozidis, Ph.D., is with the Dept. of Physical Education & Sport Science, University of Thessaly, Trikala, Greece, e-mail: gorozidis@gmail.com
Omiros Vlahos, Ph.D. student, is with the Dept. of Physical Education & Sport Science, University of Thessaly, Trikala, Greece, e-mail: ovlahos@pe.uth.gr
Evangelos Brisimis, Ph.D. student, is with the Dept. of Physical Education & Sport Science, University of Thessaly, Trikala, Greece, e-mail: vaggelismpr@yahoo.gr
Georgios Loules, Ph.D. student, is with the Dept. of Physical Education & Sport Science, University of Thessaly, Trikala, Greece, e-mail: geoloules@gmail.com

References

Ara, I., Vicente-Rodríguez, G., Jimenez-Ramirez, J., Dorado, C., Serrano-Sanchez, J. A., & Calbet, J. A. L. (2004). Regular participation in sports is associated with enhanced physical fitness and lower fat mass in prepubertal boys. *International Journal of Obesity, 28*, 1585-1593.

Biddle, S. J. H., Gorely, T., Pearson, N., & Bull, F. C. (2011). An assessment of self-reported physical activity instruments in young people for population surveillance: Project ALPHA. *International Journal of Behavioral Nutrition and Physical Activity, 8*, 1. DOI: 10.1186/1479-5868-8-1

Biddle, S. J. H., Gorely, T., & Stensel, D. J. (2004). Health-enhancing physical activity and sedentary behaviour in children and adolescents. *Journal of Sports Sciences, 22*(8), 679-701. DOI: 10.1080/02640410410001712412

Booth, M. L., Okely, A. D., Chey, T., & Bauman, A. (2001). The reliability and validity of the physical activity questions in the WHO health behaviour in schoolchildren (HBSC) survey: a population study. *British Journal of Sports Medicine, 35*, 263-267.

Cantril, H. (1965). *The pattern of human concerns*. New Brunswick, NJ: Rutgers University Press.

Cheon, S. H., Reeve, J., Lee, J., & Lee, Y. (2015). Giving and receiving autonomy support in a high-stakes sport context: A field-based experiment during the 2012 London Paralympic Games. *Psychology of Sport and Exercise, 19*, 59-69. DOI: 10.1016/j.psychsport.2015. 02.007

Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling: A Multidisciplinary Journal, 9*, 233-255. DOI: 10.1207/S15328007SEM0902_5

Crane, J., & Temple, V. (2015). A systematic review of dropout from organized sport among children and youth. *European Physical Education Review, 21*(1), 114-131. DOI: 10.1177/1356336X14555294

Cronbach, L. J. (1951). *Statistical power analysis for the behavioral sciences* (2nd Eds). New York: Academic Press.

Cuff, S., Loud, K., & O' Riordan, M. A. (2010). Overuse injuries in high school athletes. *Clinical Pediatrics, 49*(8), 731-736. DOI: 10.1177/0009922810363154

Currie, C., Roberts, C., Morgan, A., Smith, R., Settertobulte, W., Samdal, O., & Barnekow Rasmussen, V. (2004). *Young people's health in context - Health Behaviour in School-aged Children (HBSC) study: International report from the 2001/02 survey*. Copenhagen: WHO-Europe.

Davis, T. C., Arnold, C., Nandy, I., Bocchini, J. A., Gottlieb, A., George, R. B., & Berkel, H. (1997). Tobacco use among male high school athletes. *Journal of Adolescent Health, 21*(2), 97-101. DOI: 10.1016/s1054-139x(97)00032-3

Diener, E., Wirtz, D., Tov, W., Kim-Prieto, C., Choi, D.-w., Oishi, S., & Biswas-Diener, R. (2010). New well-being measures: Short scales to assess flourishing and positive and negative feelings. *Social Indicators Research, 97*(2), 143-156. DOI: 10.1007/s11205-009-9493-y

DiFiori, J. P., Güllich, A., Brenner, J. S., Côté, J., Hainline, B., Ryan, E., & Malina, R. M. (2018). The NBA and youth basketball: Recommendations for promoting a healthy and positive experience. *Sports Medicine, 48*, 2053-2065. DOI: 10.1007/s40279-018-0950-0

Duda, J. L., & Appleton, P. R. (2016). Empowering and disempowering coaching climates: Conceptualization, measurement considerations, and intervention implications. In M. Raab, P. Wylleman, R. Seiler, A.-M. Elbe, & A. Hatzigeorgiadis (Eds.), *Sport and Exercise Psychology Research: From Theory to Practice* (p. 373-388). Elsevier Academic Press. DOI: 10.1016/B978-0-12-803634-1.00017-0

Duda, J. L., Quested, E., Haug, E., Samdal, O., Wold, B., Balaguer, I., … Cruz, J. (2013). Promoting adolescent health through an intervention aimed at improving the quality of their participation in physical activity ('PAPA'): background to the project and main trial protocol. *International Journal of Sport and Exercise Psychology, 11*(4), 319-327. DOI: 10.1080/1612197X.2013.839413

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*, 685-698. DOI: 10.1093/ije/dyq272

Eime, R. M., Young, J. A., Harvey, J. T., Charity, M. J., & Payne, W. R. (2013). A systematic review of the psychological and social benefits of participation in sport for children and adolescents: informing development of a conceptual model of health through

sport. *International Journal of Behavioral Nutrition and Physical Activity, 10*(98). DOI: 10.1186/1479-5868-10-98

Fenton, S. A. M., Duda, J. L., Appleton, P. R., & Barrett, T. G. (2017). Empowering youth sport environments: Implications for daily moderate-to-vigorous physical activity and adiposity. *Journal of Sport and Health Science, 6*, 423-433. DOI: 10.1016/j.jshs.2016.03.006

Fietz, M., Touyz, S., & Hay, P. (2014). A risk profile of compulsive exercise in adolescents with an eating disorder: a systematic review. *Advances in Eating Disorders: Theory, Research and Practice, 2*(3), 241-263. DOI: 10.1080/21662630.2014.894470

Fraser-Thomas, J., & Côté, J. (2006). Youth sports: Implementing findings and moving forward with re-search. *Athletic Insight the Online Journal of Sport Psychology, 8*(3), 12-27.

Gagné, M., Ryan, R. M., & Bargman, K. (2003). Autonomy support and need satisfaction in the motivation and well-being of gymnasts. *Journal of Applied Sport Psychology, 15*, 372-390. DOI: 10.1080/10413200390238031

Goudas, M. (2010). Prologue: A review of life skills teaching in sport and physical education. *Hellenic Journal of Psychology, 7*, 241-258.

Gould, D., & Carson, S. (2008). Life skills development through sport: current status and future directions. *International Review of Sport and Exercise Psychology, 1*(1), 58-78. DOI: 10.1080/17509840701834573

Goudas, M., & Hassandra, M. (2006). Greek students' motives for participation in physical education. *International Journal of Physical Education, XLIII*, 85-89.

Greydanus, D. E., & Patel, D. R. (2002). Sports doping in the adolescent athlete: The hope, hype, and hyperbole. *The Pediatric Clinics of North America, 49*, 829-855. DOI: 10.1016/S0031-3955(02)00021-4

Guagliano, J. M., Lonsdale, C., Kolt, G. S., Rosenkranz, R. R., & George, E. S. (2015). Increasing girls' physical activity during a short-term organized youth sport basketball program: A randomized controlled trial. *Journal of Science and Medicine in Sport, 18*(4), 412-417. DOI: 10.1016/j.jsams.2015.01.014

Guthold, R., Stevens, G. A., Riley, L. M., & Bull, F. C. (2020). Global trends in insufficient physical activity among adolescents: a pooled analysis of 298 population-based surveys with 1.6 million participants. *The Lancet Child & Adolescent Health, 4*, 23-35. DOI: 10.1016/S2352-4642(19)30323-2

Habelt, S., Hasler, C. C., Steinbrück, K., & Majewski, M. (2011). Sport injuries in adolescents. *Orthopedic Reviews, 3*(2), 82-86. DOI: 10.4081/or.2011.e18

Harwood, C. G., Barker, J., & Anderson, R. (2015). Psychosocial development in youth soccer players: Assessing the effectiveness of the 5C's intervention program. *The Sport Psychologist, 29*(4), 319-334.

Hebert, J. J., Møller, N. C., Andersen, L. B., & Wedderkopp, N. (2015). Organized sport participation is associated with higher levels of overall health-related physical activity in children (CHAMPS Study-DK). *PLoS ONE, 10*(8), e0134621. DOI: 10.1371/journal. pone.0134621

Hoffman, J. R., Kang, J., Faigenbaum, A. D., & Ratamess, N. A. (2005). Recreational sports participation is associated with enhanced physical fitness in children. *Research in Sports Medicine, 13*(2), 149-161. DOI: 10.1080/15438620590956179

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal, 6*(1), 1-55. DOI: 10.1080/10705519909540118

Karatrantou, K., Stavrou, V., Hasioti, P., Varveri, D., Krommidas, C., & Gerodimos, V. (2020). An enjoyable school-based swimming training program improves students' aquaticity. *Acta Paediatrica, 109*, 166-174. DOI: 10.1111/apa.14920.

Kjønniksen, L., Anderssen, N., & Wold, B. (2009). Organized youth sport as a predictor of physical activity in adulthood. *Scandinavian Journal of Medicine & Science in Sports, 19*(5), 646-654.

Kokkevi, A., Stavrou, M., Kanavou, E., & Fotiou, A. (2014). *The repercussions of the economic recession in Greece on adolescents and their families*. Innocenti Working Paper No.2014-07, UNICEF Office of Research, Florence.

Kokko, S., Martin, L., Geidne, S., Van Hoye, A., Lane, A., Meganck, J., … Koski, P. (2019). Does sports club participation contribute to physical activity among children and adolescents? A comparison across six European countries. *Scandinavian Journal of Public Health*, *47*(8), 851-858. DOI: 10.1177/1403494818786110

Krommidas, C., Galanis, E., Papaioannou, A., Tzioumakis, G., Zourbanos, N., Keramidas, P., & Digelidis, N. (2016). The relationship of Empowering and Disempowering coaching climate with enjoyment and quality of life variables in Greek youth soccer. *Inquiries in Sport & Physical Education, 14*(2), 19-35.

Lagestad, P., & Sørensen, A. (2018). Longitudinal changes in sports enjoyment among adolescents. *Journal of Physical Education and Sport, 18*(1), 89-97. DOI: 10.7752/jpes.2018.01011

Leek, D., Carlson, J. A., Cain, K. L., Henrichon, S., Rosenberg, D., Patrick, K., & Sallis, J. F. (2011). Physical activity during youth sports practices. *Archives of Pediatrics & Adolescent Medicine, 165*(4), 294-299. DOI: 10.1001/archpediatrics.2010.252

Lisha, N. E., & Sussman, S. (2010). Relationship of high school and college sports participation with alcohol, tobacco, and illicit drug use: A review. *Addictive Behaviors, 35*(5), 399-407. DOI: 10.1016/j.addbeh.2009.12.032

Marsh, H. W., Balla, J. R., & Hau, K. T. (Eds.). (1996). *An evaluation of incremental fit indexes: A clarification of mathematical and empirical properties*. Mahwah, NJ: Lawrence Erlbaum.

Marsh, H. W., Martin, A. J., & Jackson, S. (2010). Introducing a short version of the physical self-description questionnaire: New strategies, short-form evaluative criteria, and applications of factor analyses. *Journal of Sport & Exercise Psychology, 32*, 438-482.

McAuley, E., Duncan, T., & Tammen, V. V. (1989). Psychometric properties of the intrinsic motivation inventory in a competitive sport setting: A confirmatory factor analysis. *Research Quarterly for Exercise and Sport, 60*, 48-58.

McCarthy, P. J., Jones, M. V., & Clark-Carter, D. (2008). Understanding enjoyment in youth sport: A developmental perspective. *Psychology of Sport and Exercise, 9*(2), 142-156. DOI: 10.1016/j.psychsport.2007.01.005

Papacharisis, V., & Goudas, M. (2003). Perceptions about exercise and intrinsic motivation of students' attending a health-related program. *Perceptual and Motor Skills, 97*, 689-696.

Papaioannou, A., Appleton, P., Torregrosa, M., Jowett, G., Bosselut, G., Gonzalez, L., … Zourbanos, N. (2013). Moderate-to-vigorous physical activity and personal well-being in European youth soccer players: Invariance of physical activity, global self-esteem and vitality across 5 countries. *International Journal of Sport and Exercise Psychology, 11*, 351-364. DOI: 10.1080/1612197X.2013.830429

Reich, P., Rechtik, Z., Miklánková, L., & Prukner, V. (2016). Comparison of the physical activity in the daily program between youth basketball players and adolescents aged from 16 to 17 years in the Czech Republic. *Journal of Education, Health and Sport, 6*(13), 174-173. DOI: 10.5281/zenodo.247109

Richter, M., Erhart, M., Vereecken, C. A., Zambon, A., Boyce, W., & Gabhainn, S. N. (2009). The role of behavioural factors in explaining socio-economic differences in adolescent health: A multilevel study in 33 countries. *Social Science & Medicine, 69*, 396-403.

Ryan, R. M., & Frederick, C. (1997). On energy, personality, and health: Subjective vitality as a dynamic reflection of well-being. *Journal of Personality, 65*(3), 529-565.

Scanlan, T. K., Carpenter, P. J., Lobel, M., & Simons, J. P. (1993). Sources of enjoyment for youth sport athletes. *Pediatric Exercise Science, 5*, 275-285.

Schumacher Dimech, A., & Seiler, R. (2011). Extra-curricular sport participation: A potential buffer against social anxiety symptoms in primary school children. *Psychology of Sport and Exercise, 12*, 347-354. DOI: 10.1016/j.psychsport.2011.03.007

Smith, R. E., Smoll, F. L., & Cumming, S. P. (2007). Effects of a Motivational Climate Intervention for Coaches on Young Athletes' Sport Performance Anxiety. *Journal of Sport & Exercise Psychology, 29*(1), 39-59. DOI: 10.1123/jsep.29.1.39

Smith, R. E., Smoll, F. L., & Schutz, R. W. (1990). Measurement and correlates of sport-specific cognitive and somatic trait anxiety: The Sport Anxiety Scale. *Anxiety Research, 2*, 263-280. DOI: 10.1080/08917779008248733

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54*, 1063-1070. DOI: 10.1037/0022-3514.54.6.1063.

Wickel, E. E., & Eisenmann, J. C. (2007). Contribution of youth sport to total daily physical activity among 6- to 12-yr-old boys. *Medicine and Science in Sports and Exercise, 39*(9), 1493-1500. DOI: 10.1249/mss.0b013e318093f56a

Wold, B., Duda, J. L., Balaguer, I., Smith, O. R. F., Ommundsen, Y., Hall, H. K., … Krommidas, C. (2013). Comparing self-reported leisure time physical activity, subjective health and life satisfaction among youth soccer players and adolescents

in a reference sample. *International Journal of Sport and Exercise Psychology, 11*(4), 328-340. DOI: 10.1080/1612197X.2013.830433

World Health Organization (2010). *Global Recommendations on Physical Activity for Health*. Geneva: World Health Organization.