

Full Length Research Paper

Evaluation of sport mental toughness and psychological wellbeing in undergraduate student athletes

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This study aims to evaluate the relationships between sport mental toughness (SMT) and psychological wellbeing (PWB) of undergraduate student athletes. Mental toughness represents the ability of a person to cope with the demands of training and competition, increased determination, focus, confidence, and maintain control under pressure. Mental toughness has been explained as the ability of an athlete to cope with the requests of practice and competition, improved determination, focus, self-confidence and keeping control under pressure. The concept of PWB has been introduced in eudaimonic part as the realization of potential through some form of struggle. The sample of the study constituted by 130 participants from two Turkish universities, included participants from a Physical Education and Sport Education program from four years of standard undergraduate study. To assess mental toughness, the Sports Mental Toughness Questionnaire (SMTQ) (Sheard et al., 2009) was administered; while to assess PWB, Ryff's PWB scale (1989a) were given to volunteer participants. To identify the internal consistency of the validated questionnaires, Cronbach's alpha score was used. The relationship between SMT and PWB was identified by conduction of Pearson Product Moment Correlations. To check for age, gender and level of the study, the hierarchical multiple linear regression analyses was used to examine the predictive capacity of mental toughness on PWB. Multiple linear regression analyses' findings revealed that sub-dimensions of SMT were moderate to strong predictors of PWB with between 40 and 66% of variance explained. Consequently, the demographic factors were not found to predict PWB. These results are consistent with the assumptions and continue to show the potential importance of SMT within the physical education and sports learning environments.

Key words: Mental toughness, psychological wellbeing, student athlete.

INTRODUCTION

Technological developments can result in individuals' pushing their limits which can cause a number of

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physiological illnesses and depression since they cause inevitable changes in modern life and socio-cultural values, create competition, and bring societies' very complex work and life environments into the forefront. In such an environment, one of the most important missions of a society is to contribute to the development of its members by raising them as physiologically and mentally healthier individuals and education is the key in order to carry out this mission.

Education is one of the essential foundations required for a society's development. It is believed that education helps to raise top level individuals by bringing out their potential strengths and skills. Raising individuals physiologically, mentally, emotionally, and socially as a whole is one of the basic principles of contemporary education. The realization of education's aim in accordance with contemporary expectations is possible through not only mental but also physiological training. Physical and sports education, which aim to teach movement is an indispensable part of basic education and contributes to the aims of basic education. The primary aim of physical and sports education, which has great importance within basic education, is to help increase every learner's movement capacity to top levels by educating them through physical activities. At the same time, it aims to contribute to children's physical, mental, social, and emotional development and increase these qualities to top levels (Pate et al., 1998).

The concept of education, which enables the transfer of cultural values that have accumulated ever since the creation of society to new generations and includes substructure elements such as equipment and programs as well as teacher qualities, requires efficient harmony and good quality for the process in which an individual will stay for years so that lasting behavioural change occurs (Ball and Forzani, 2009).

The time an individual spends at university is one of the most unsteady periods of development and falls on the last phase of adolescence which is considered as both a social and biological transition period. This period in addition to complicity of adolescence is one in which many problems in relation to leaving home and family, selecting friends, joining groups, becoming a candidate for an occupation, and finding a job are observed. Students who start university in a place other than their hometown suddenly find themselves in a different academic and social environment (Özdel et al., 2002). This new stage is different compared to the past in terms of educational experiences, relationships, and social life. Students have to take responsibility and make decisions on their own in this social environment to which they have not yet become accustomed. Using their individual potential in the shortest amount of time possible, students have to adapt to this new environment in which family and friend support has suddenly been interrupted (Karahan et al., 2005).

Students who are studying as future teachers and the problems they experience is an important topic for consideration. In this sense, considering they will have a role in bringing up the next generation of individuals for the society, it becomes important that pre-service physical and sports education teachers' mental health and physiological well-being levels are determined and necessary precautions are taken to ensure they have these qualities at desired levels. Furthermore, it is important that the awareness of institutions that prepare physical and sports education teachers is increased about these phenomena. Studies have shown that student who have recently started studying in their degree programmes and are still in their first year of study experience mental health and physiological well-being related problems at different levels. Therefore, finding more about factors relating to mental health and physiological well-being has become important (van Driel et al., 2001).

In higher education, a number of contributors can anticipate that mental toughness is related to psychological well-being. While support mechanisms and learning environmental are external factors that can help transition and coping (Nelson et al., 2006), individual features also make an important contribution to this process. Mental toughness is affiliated with a more effective coping ability and optimistic assessments (Nicholls et al., 2008) and high levels of self-esteem (Clough et al., 2002). In their study Pritchard et al. (2007), informed that optimism and self-esteem in particular are positively related to effective student transitions. On the other side, being committed, having narrow personality traits and the competency to cope with concurrent changes and requests that occur during transitions are important features related to both academic achievement and mental health (Crust et al., 2014).

According to information presented so far, the goal of the present study is to investigate the relationship between mental toughness and psychological well-being levels through a sample of student athletes who are studying at the university to be physical education teachers.

METHODOLOGY

Participants

The sample of study included athletes who were training and competing in a wide variety of sports. The sample consisted of 130 athletes (mean \pm s: age 21.25 ± 2.87 years). Participants' age ranged from 18 to 27 years. There were 50 first-year students, 48 second-year students and 32 third-year students; all students were studying in departments of physical education and sport.

Instruments

The Sport Mental Toughness Questionnaire (SMTQ) (Sheard et al.,

Table 1. Means and standard deviations, normality, Cronbach alpha scores, and bivariate correlations.

Sub-scales	M (SD)	Skew	Kurt	1	2	3	4	5	6	7	8	9
Confidence	3.01 (0.54)	-0.51	0.55	(0.72)								
Constancy	3.29 (0.51)	-0.60	0.43	0.60**	(0.65)							
Control	2,82 (0.70)	-0.45	0.89	0.46**	0.58**	(0.63)						
Purpose in life	4.47 (0.69)	-0.67	0.68	0.70**	0.64**	0.68**	(0.65)					
Pos. relations	4.78 (0.67)	-0.70	0.55	0.41**	0.51**	0.55**	0.43**	(0.77)				
Autonomy	4.10 (0.71)	-0.57	0.47	0.39**	0.46**	0.32**	0.39**	0.55**	(0.69)			
Personal Growth	4.54 (0.62)	-0.76	0.50	0.53**	0.57**	0.46**	0.51**	0.47**	0.49**	0.69		
Env. mastery	4.33 (0.68)	-0.72	0.90	0.51**	0.72**	0.60**	0.66**	0.38**	0.62**	0.42**	(0.71)	
Self-acceptance	4.24 (0.80)	-0.60	20	0.48**	0.63**	0.72**	0.55**	0.49**	0.52**	0.58**	0.52**	(0.61)

**Statistically significant at $p < 0.01$.

2009) is a 14-item questionnaire established to ascertain athletes' mental toughness levels. Students athletes answered items on a four point Likert scale anchored from not true at all to very true and has an approximately completion time of around 4 min. Total scores for SMTQ and for three subscales can be calculated. SMTQ has three sub-dimensions: 6 items for confidence ($\alpha = 0.80$), 4 items for constancy ($\alpha = 0.74$), 4 items for control ($\alpha = 0.71$).

In this research, psychological well-being was evaluated by Ryff's Psychological Well-Being scale (1989a) on the six dimensions of psychological well-being: purpose in life, positive relations with others, autonomy, personal growth, environmental mastery and self-acceptance. The original version consists of six dimensions of 20 items each but however, the shortened version proposed by van Dierendonck (2004) was used. Totally, there were 39 items for six dimensions. The subscale length varied between six items for self-acceptance, positive relations with others, environmental mastery, and purpose in life; seven items for personal growth and eight items for autonomy. A six-point answering scale was used for all scales, ranging from 1 (totally disagree) to 6 (totally agree).

Procedure

At the beginning of the research process, the goal of the study was explained to the participants and they were made to know that they could withdraw at any time, and then they all signed an informed consent form. A demographic information sheet and the SMTQ (Sheard et al., 2009) and Ryff's Psychological Well-Being scale (1989a) were administered to the student athletes.

Data analysis

The obtained data was screened for outliers and checked for normality. Normality (Kurtosis, skewness) and descriptive statistics (mean - standard deviation) of variables was calculated before statistical data analysis. To identify the internal consistency of the validated questionnaires, Cronbach's alpha score was used. The relationship between SMT and PWB was identified by conduction of Pearson Product Moment Correlations. To evaluate for demographics (level of study, gender and age), the hierarchical multiple linear regression analyses was used to examine the predictive capacity of mental toughness on psychological wellbeing.

RESULTS

Measures of Skewness and Kurtosis found the data to

be normally distributed. Descriptive statistics are presented in Table 1. Mean values of PWB within the study were alike to data obtained by Dierendonck (2005) for young adults. SMT sub-dimensions revealed sufficient internal consistency ($\alpha = 0.78$).

Pearson bivariate correlations were evaluated to control check relationships among all components. In particular, the matrix ratio was statistically meaningful. All SMT components were positively affiliated with all PWB components. The strongest relationships consisted between control and self-acceptance ($r = 0.72$, $p < 0.01$), constancy and environmental mastery ($r = 0.72$, $p < 0.01$), confidence and purpose in life ($r = 0.70$, $p < 0.01$). All correlations are presented in Table 1.

Redundancy can be named as the reason of founded high level of correlations (Kline, 1999). The considerate to moderately-high correlations within PWB components supports the relative independence of each component. To further investigate the relationship between SMT and PWB variables, a series of multiple hierarchical linear regression analyzes were performed. In each analysis, the age, sex, and year of study were imported at step one by utilizing the enter method. In the second step, the three SMT variables were introduced. Each aspect of psychological well-being functioned as a dependent variable in the separate analysis. Overall, the results indicated that most of the variance for each psychological well-being scale was explained by one or more components of SMT.

In overall, the variance explained of each wellbeing scale ranged from 40 to 66%. Respectively, purpose in life was positively predicted by confidence ($b = 0.31$, $p < 0.01$) and control ($b = 0.36$, $p < 0.01$). Positive relations with others were positively predicted by confidence ($b = 0.34$, $p < 0.001$). Autonomy was positively predicted by constancy ($b = 0.56$, $p < 0.01$) and control ($b = 0.49$, $p < 0.01$). Personal growth was positively predicted by confidence ($b = 0.38$, $p < 0.01$) and constancy ($b = 0.27$, $p < 0.001$). Environmental mastery was positively predicted by confidence ($b = 0.46$, $p < 0.01$) and control

Table 2. Hierarchical multiple linear regression analyses.

Subscales as variable	Step 1 (Age, gender, year of study)	Step 2 (Mental toughness subscales)
Purpose in life	$\Delta R^2 = 0.05$ $F(3,126) = 0.82$ Age $\beta = -0.06$, Gen $\beta = 0.02$ YoS $\beta = 0.08$	$\Delta R^2 = 0.54^{**}$ $F(6,123) = 15.66^{**}$ Conf $\beta = 0.31^{**}$, Cons $\beta = 0.07$ Cont $\beta = 0.36^{**}$
Pos. relations	$\Delta R^2 = 0.04$ $F(3,126) = 1.78$ Age $\beta = -0.22$, Gen $\beta = 0.09$ YoS $\beta = 0.15$	$\Delta R^2 = 0.34^{**}$ $F(6,123) = 12.24^{**}$ Conf $\beta = 0.42^{***}$, Cons $\beta = -0.11$ Cont $\beta = -0.03$
Autonomy	$\Delta R^2 = 0.02$ $F(3,126) = 2.03$ Age $\beta = -0.01$, Gen $\beta = -0.19$ YoS $\beta = 0.09$	$\Delta R^2 = 0.64$ $F(6,123) = 18.33^{**}$ Conf $\beta = 0.14$, Cons $\beta = 0.56^{**}$ Cont $\beta = 0.49^{**}$
Personal Growth	$\Delta R^2 = 0.01$ $F(3,126) = 1.10$ Age $\beta = 0.09$, Gen $\beta = 0.02$ YoS $\beta = 0.07$	$\Delta R^2 = 0.41^{**}$ $F(6,123) = 7.44^{**}$ Conf $\beta = 0.38^{**}$, Cons $\beta = 0.27^{***}$ Cont $\beta = 0.04$
Env. mastery	$\Delta R^2 = 0.04$ $F(3,126) = 0.38$ Age $\beta = -0.09$, Gen $\beta = -0.02$ YoS $\beta = 0.02$	$\Delta R^2 = 0.74^{**}$ $F(6,123) = 26.62^{**}$ Conf $\beta = 0.46^{**}$, Cons $\beta = 0.31^{***}$ Cont $\beta = 0.13$
Self-acceptance	$\Delta R^2 = 0.02$ $F(3,126) = 1.22$ Age $\beta = -0.07$, Gen $\beta = -0.01$ YoS $\beta = 0.26$	$\Delta R^2 = 0.68$ $F(6,123) = 30.47$ Conf $\beta = 0.59^{***}$, Cons $\beta = 0.10$ Cont $\beta = 0.04$

Gen: Gender, YoS: year of study, Conf: confidence, Cons: constancy, Cont: control. *Statistically significant at $p < 0.05$. **Statistically significant at $p < 0.01$. ***Statistically significant at $p < 0.001$.

($b = 0.31$, $p < 0.001$) and self-acceptance was positively predicted by confidence ($b = 0.59$, $p < 0.001$) (Table 2).

DISCUSSION

The goal of the study was to investigate the relationship between mental toughness and psychological well-being levels through a sample of student athletes who were studying at the university to be physical education teachers.

The findings of the study support that psychological well-being was significantly PWB was meaningfully and positively related to SMT. Specifically, subscales of SMT were found to be moderate/strong predictors of PWB. However, other variables such as gender, age and year of study did not predict psychological well-being. Moreover, the findings of this study supported other studies of those which highlighted the value of mental toughness in university education (Crust et al., 2014; Stamp et al., 2015).

On the other hand, the findings of the study identify which particular components of SMT predict each of the six PWB scales, allowing more specific future interventions to improve well-being. It was revealed that constancy was the strongest predictor of both environmental mastery and purpose in life. Constancy that reflects determination, personal responsibility, and an uncompromising attitude can make sense as

managing the multiple and complex appeals of student life (Scanlon et al., 2010; Wynaden et al., 2013) will likely require deep commitment and persistence.

Confidence was the strongest predictor of both positive relations with others and self-acceptance. This result can be speculated as the university life of students' offers challenges, adversity, performance setting, and it requires long-term commitment in order to achieve one's performance and academic goals. With self-acceptance reflecting positive assessments of self and life in the past (Ryff, 1989), the relationship of confidence is consistent with the theory of self-efficacy (Bandura, 1977) and in particular reports the most coherent source of employment, past accomplishments. In addition, Clough and Strycharczyk (2012) found a high degree of confidence and optimism assumed personal perception of dignity. Intuitively, it can be ascertained that the confidence of the predictive factor of positive relationships would be with others, because of the confidence to communicate and not be limited by other people. Control subscale was not found as the strongest predictor of any PWB subscale, but it was found as a moderate predictor of two PWB subscales which include, autonomy and purpose of life.

High mental toughness level is associated to respond positively to critical feedback, engage in group settings, see competence in other than motivation antecedent, create challenges as an opportunity to learn and develop priorities effectively and spend high expenditure on the

effort, effectively to cope and remain calm when under pressure in life or sport situations (Clough and Strycharczyk, 2012).

While these are apparently possible explanations of the alleged relationship, it is interesting to note that low levels of mental resistance are therefore associated with lower psychological well-being. Students with a lower mental toughness are likely to be less resistant to the demands of higher education. As others pointed out, mental toughness sports questionnaire could be an important screening tool in identifying "in-dangerous" physical education and sports department students who fail to have the necessary personal resources at university (Crust et al., 2014).

Several limitations are acknowledged. First, small part of the students invited from a total of physical education and sports departments to participate actually did and there was a higher response rate for women than men. Secondly, some other predictors or correlates should be in studies like academic achievement, hardness, optimism, etc. To address this problem, we believe that future researches should study other correlates and those should be applied on big samples.

Conclusion

The goal of the study was to inquire the relationship between mental toughness and psychological well-being levels through a sample of student athletes who were studying at the university to be physical education teachers.

It can be concluded that demographic factors including gender, year of study and age were not found to predict PWB. These results are consistent with the assumptions and continue to show the potential importance of SMT within the physical education and sports learning environments

CONFLICT OF INTERESTS

The authors have not declared any conflicts of interest.

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