ORIGINAL ARTICLE

Mental Toughness and Motivational Climate of Volleyball Players

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ABSTRACT
Background: Sports psychology focuses on the analysis of various psychological variables and cognitive processes that affect athletes' performance and focuses on improving their cognitive abilities to maximize efficiency.
Aim: The aim of this research is to determine the relationship between mental toughness and motivational climate in licensed volleyball players studying in Coaching Education departments.
Methods: In this study, the relational screening model was used to determine the relationship between mental toughness and motivational climate in licensed volleyball players studying in Coaching Education departments.
Results: it was concluded that the performance climate levels of licensed volleyball players studying in coaching education departments increased as their level of confidence increased, and decreased as their constancy and control levels increased. Again, as a result of the analysis, it was observed that the variables of confidence, constancy and control had a significant role in predicting the performance climate of licensed volleyball players.
Conclusion: it can be said that mental toughness predicts motivational climate in licensed volleyball players who study in coaching education departments.
Keywords: Mastery Climate, Performance Climate, Mental Toughness, Coaching Education Students, Motivational Climate.

INTRODUCTION

Athletes are remembered for their unforgettable performances in their games. This has been a matter of curiosity by sports psychology researchers to identify what "makes these athletes psychologically great". In addition to determining the psychological characteristics of these athletes, how athletes develop these qualities has also begun to be examined in recent years.[1] Sports psychology focuses on the analysis of various psychological variables and cognitive processes that affect athletes' performance and focuses on improving their cognitive abilities to maximize efficiency. One of the psychological factors that are thought to have an important contribution to the success of athletes is seen as mental toughness.[2] Mental toughness has been defined as the ability to perform under pressure during competition, and it has been emphasized that it is one of the qualities required for success in elite athletes.[3,4] Mental toughness is seen as a necessary feature for success as it involves compelling actions in sports activities that carry all kinds of positive or negative conditions.[5] In order to achieve success, athletes need to overcome negative situations quickly and adapt quickly to the conditions required by the performance.[6]

Mental toughness allows the athlete to control himself without the need for an external motivation, to take a determined stance in order to show a successful performance and to recover quickly after negative situations.[7] An athlete with high mental toughness locks into his goal and does not hesitate to sacrifice in this direction.[8] Recently, mental toughness has begun to be considered as a psychological performance indicator in athletes. It is stated that in addition to positive physiological processes, psychological competence is also extremely important in order to exhibit high performance.[9] Good psychological processes are supported by positive environmental factors as well as physiological processes. It is known that the way the environmental structure is perceived by the athlete has an effect on the probability of a certain target situation occurring in the training and competition areas. Motivational climate is related to how the training and competition environment is perceived by the athletes and can have significant effects on their goal orientation and performance.[10] Motivational climate refers to the messages, behaviors, values and attitudes that are conveyed to individuals and affect their perspectives on effort and success.[11] Motivational climate is evaluated in two sub-categories as mastery and performance.

In a mastery-oriented motivational climate, athletes are evaluated and rewarded based on their efforts for performance improvement, and thus an environment that supports athletes to train is provided. In a mastery-oriented motivational climate, athletes are encouraged to try new skills, and even mistakes made in this motivational climate type are seen as opportunities that can contribute to the development of athletes. Performance oriented motivational climate emphasizes winning and being superior to others. It encourages performance comparisons among athletes, emphasizes focus on the opponent's abilities and actions, and mistakes are punished.[12] It is important for trainers and athletes to discover and apply various methods that can improve sportive performance. It should be noted that physical training alone is not sufficient for peak performance.[13] From this point of view, the aim of this study is to determine the relationship between mental toughness and motivational climate in licensed volleyball players studying in Coaching Education departments.

MATERIAL AND METHODS

Research Model: In this study, the relational screening model was used to determine the relationship between mental toughness and motivational climate in licensed volleyball players studying in Coaching Education departments. Relational screening model are models that aim to measure the presence and degree of change between two or more variables.[14]

Participants of the Study: The universe of the research consists of licensed volleyball players who study at the Coaching Education departments of universities in the 2019-2020 academic year. The sample of the study consists of 208 (109 male, 99 female) volunteer students selected by convenience sampling method among the students studying at four different universities. Convenience sampling is the sampling performed on (voluntary) individuals who are in the immediate vicinity, who are easy to reach, are available and want to participate in the study.[15]

Data Generation Process and Tools: In the study, Sport Mental Toughness Questionnaire-SMTQ and Perceived Motivation Climate Questionnaire (PMCSQ) were used. Information on measurement tools is presented below.

Perceived Motivation Climate Questionnaire (PMCSQ): Perceived Motivation Climate Questionnaire (PMCSQ)was developed by Walling, Duda, and Chi.[16] The scale was adapted for Turkish athletes by Toros (2001).[17] There are two sub-dimensions in the scale: performance climate and mastery climate. Scale; It consists of a total of 21 items, 9 of them are performance and 12 of them are mastery climate. The scale is evaluated according to the five-point Likert evaluation system (1 = Strongly disagree, 5 = Strongly agree). In the adaptation study, the Chronbach Alpha internal consistency coefficient of the scale was determined as .84 for mastery climate and .90 for performance climate. In our study, the internal consistency coefficients of the sub-dimensions are as follows; .92 for performance climate and .86 for mastery climate. The internal consistency coefficient for all items was calculated as .89.

Sport Mental Toughness Questionnaire-SMTQ: In order to determine the level of mental toughness in the sports environment, the Sport Mental Toughness Questionnaire-SMTQ[18] was adapted to Turkish culture by Altıntaş and Koruç (2016)[19] In addition to general mental toughness, the scale consisting of three sub-dimensions (confidence, constancy and control) is of the 4-point Likert type (1 = completely wrong; 4 = very correct). The scale also includes reverse questions. Cronbach's Alpha internal consistency coefficients calculated for the sub-dimensions of the scale, respectively; .84 for confidence, .79 for control, .51 for constancy. Internal reliability coefficient of all items of the scale was calculated as .87. In our study, the internal consistency coefficients of the sub-dimensions; it was calculated as .81 for the confidence sub-dimension, .63 for the constancy sub-dimension and .85 for the control sub-dimension. In addition, the internal consistency coefficient for all items was calculated as .84.

Analysis: SPSS 25.0 program was used for descriptive statistics and calculations of multiple regression analysis of the data. In order to prepare the data before data analysis, missing data analysis, which are the assumptions of multiple linear regression, were performed, extreme values were determined, the multivariate normality assumption and the multiple linearity assumption were tested. When the data set of our study was examined, it was seen that there was no missing data. It was investigated whether there were any observations with extreme (outliers) values in the data set. The histogram and box plots of the total values obtained from each scale and the sub-dimensions of the scales were used to determine the one-way extreme values. Multiple extreme values were tried to be determined by examining the Mahalanobis Distance Criterion. Accordingly, no extreme value was found in the data set of our study, the analysis continued. In order to check whether the multivariate normality assumption was achieved, the multivariate normality of the data set was examined and it was concluded that the errors were normally distributed in the data set of our research. In order to determine whether there is a connection problem between the independent variables, the multiple linearity assumption was examined. For the multiple linearity assumption, R^2 the values of each variable between the other variables were calculated and it was found to be <0.90. Tolerance values (1- R^2) showing the ratio of total standardized variance are greater than 0.10. In addition, another statistic, the Variance Inflation Factor (VIF), was found to be <3. As a result, it was found that there is no multicollinearity problem for research data.[20]

RESULTS

In order to examine the relationship between mental toughness and motivational climates of licensed volleyball players studying in coaching education departments, Pearson Product Moment Correlation values were calculated and the analysis results are presented in Table 1.

Table 1.Correlation Values Between Mental Toughness and Motivational Climate of Licensed Volleyball Players in Coaching Education Departments

Variables	1	2	3	4	5
1. Performance climate	-				
2. Mastery Climate	.694**	-			
3. Confidence	.342**	.407**	-		
4. Constancy	.-165*	.315**	.292**	-	
5. Control	.251**	.235**	.045	.296**	-

Correlations are significant at the 0.01 level.
Correlations are significant at the 0.05 level.

When Table 1 is examined, it is seen that there is a positive and highly significant relationship between the mastery climate and the performance climate. It is seen that there is a low level and positive relationship between confidence and performance climate. It is seen that there is a low level and positive relationship

between confidence and mastery climate. In addition, it is seen that there is a low level of positive correlation between constancy and confidence. It is seen that there is a low level and positive correlation between control and constancy. It is seen that there is a low level and negative correlation between mastery climate and control. It is seen that there is a low level and negative correlation between performance climate and control. The relationship between control and confidence of the participants is not significant.

Multiple linear regression analysis was performed to determine whether the performance climates of licensed volleyball players studying in coaching education departments were predicted by the variables of Confidence, Constancy and control, and the results are presented in Table 2.

Tablo 2: Multiple Regression Analysis Results Related to Prediction of Students' Performance Climate

Variables	B	Std. error	β	t p	Zero-order	Partial
Constant	4.739	.598	-	7.921 .000		
Confidence	.582	.090	.418	6.498 .000	.342	.414
Constancy	-.477	.141	-.227	-3.374 .001	-.165	-.230
Control	-.419	.133	-.203	-3.152 .002	-.251	-.215
R=0.481	R^2=0.231	F(3.204)=20.443		p=.000		

When the zero-order and partial correlations between the predictor variables and the dependent variables are examined, it is seen that there is a positive and low level relationship (r = 0.342) between confidence and performance climate, but when the other variables are controlled, the correlation between the two variables is calculated as r = 0.414. There is a negative and low level (r = -0.165) relationship between Constancy and performance climate. However, when the other two variables are controlled, it is seen that this correlation is calculated as r = -0.23. It is seen that the negative and low level of zero-order correlation (r = -0.251) calculated between control and performance climate. When the other two variables are controlled, it is seen that this correlation is calculated as r = -0.215.

Confidence, constancy and control together give a moderate and significant relationship with performance climate, R = 0.481, R^2= 0.231, p <.01. Confidence, Constancy and control explain together about 23% of the total variance in the performance climate. According to the standardized regression coefficient (β), the relative importance order of the predictor variables on the performance climate; confidence, constancy and control. When the t-test results regarding the significance of the regression coefficients are examined, it is seen that the confidence, constancy and control variables are significant predictors on the performance climate.

Tablo 3.Multiple Regression Analysis Results Related to Prediction of Mastery Climate by Students

Variables	B	Std.error	β	t	p	Zero-order	Partial
Constant	2.350	.516		4.552	.00		
Confidence	.420	.077	.339	5.434	.00	.407	.356
Constancy	.617	.122	.321	5.060	.00	.315	.334
Control	.652	.115	.345	5.681	.00	-.235	.370
R=0.562	R^2=0.316	F(3.204)=31.430	p=.000				

The results of the multiple linear regression analysis for predicting the mastery climate according to the confidence, constancy and control variables are given in Table 3.

When the zero-order and partial correlations between the predictor variables and the dependent variables are examined, it is seen that there is a positive and moderate relationship (r = 0.407) between confidence and mastery climate, but when the other variables are controlled, the correlation between the two variables is calculated as r = 0.356. There is a positive and moderate (r = 0.315) relationship between constancy and mastery climate. However, when the other two variables are controlled, it is seen that this correlation is calculated as r = 0.334. It is seen that the negative and low level of zero-order correlation (r = -0.235) calculated between control and mastery climate is negative and moderate (r = -0.370) when the other two variables are controlled.

Confidence, constancy and control together give a moderate and significant relationship with mastery climate, R = 0.562, R^2= 0.316, p <.01. Confidence, constancy and control explain together about 32% of the total variance in mastery climate. According to the standardized regression coefficient (β), the relative importance order of predictor variables on mastery climate; control, confidence and constancy. When the t-test results regarding the significance of the regression coefficients are examined, it is seen that the variables of confidence, constancy and control are significant predictors on mastery climate.

DISCUSSION

When the sports environments are examined, it can contain many difficulties, problems, stress and even failure concepts, especially for athletes. For this reason, athletes should keep their mental toughness as high as possible in the face of such adverse situations in order to achieve success or to recover quickly. However, mental toughness should not be seen as a skill required only in adverse situations.

When the related literature is examined; there are various studies dealing with the relationship between motivational climate and mental toughness. In a study testing a priori model that includes trainer behavior, motivational climate, and mental toughness, it was stated that motivational climate can affect the development of mental toughness of athletes.[21] Connaughton et all., (2008) [22] examined participants' perceptions of how mental toughness is developed and maintained. As a result of the study, he stated that the development of mental toughness is a long-term process involving a large number of mechanisms working together rather than independently, and one of these mechanisms is the motivational climate. Hsu (2020)[23] emphasized in his study among high school students who are athletes that mental toughness and motivational climate are important predictors of participation in sports. Another study has shown that motivation is an important contribution to shaping mental toughness. Moreover, it has been stated that change in motivational climate will assist in developing more effective individualized strategies to increase mental toughness levels in athletes.[24] Similarly, it has been emphasized that another possible advantage of mental toughness is that it can be partially developed through a particular motivational climate.[25,43,44] Connaughton, Wadey, Hanton, and Jones (2008)[22] underline in their study that mental toughness develops in the long term and that developing mental toughness requires a motivational climate at appropriate levels.

In another study, the structure between mental toughness, motivational climate and perceived coach behavior was examined by structural equation modeling. As a result of the study, it was stated that supportive coaching behaviors triggered the mastery climate in order to develop mental toughness.[26] Our findings are also in line with other studies linking the development of motivational climate with mental toughness.[22,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42]

CONCLUSION

Within the scope of this study, it was concluded that the performance climate levels of licensed volleyball players studying in coaching education departments increased as their level of confidence increased, and decreased as their constancy and control levels increased. Again, as a result of the analysis, it was observed that the variables of confidence, constancy and control had a significant role in predicting the performance climate of licensed volleyball players. Together, these variables predict 23% of the performance climate. The variable that contributes the most to the model is the confidence variable. Then, constancy and control variables contribute to the model, respectively.

When the analysis results were examined, it was concluded that the mastery climate levels of the licensed volleyball players studying in the coaching education departments increased as their confidence and constancy levels increased, and decreased as the control levels increased. As a result of the analysis, it was observed that the variables of confidence, constancy and control had a significant role in predicting the mastery climate of licensed volleyball players. Together, these variables predict 32% of the mastery climate. The variable that contributes the most to the model is the control variable. Then, constancy and control variables contribute to the model, respectively.

As a result, it can be said that mental toughness predicts motivational climate in licensed volleyball players who study in coaching education departments.

Suggestions: More research can be done in different sports branches and elite athletes to evaluate the effect of motivational climates on mental toughness. And Motivational climate and mental toughness in athletes can be examined in terms of variables such as age and gender.

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