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Article

Assessing the Relationship between Mental Imagery Ability and Mental Toughness among Boxers and Chess Players

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Keywords

Boxers, Chess Players, Mental Imagery Ability, Mental Toughness

Abstract

This study assessed the mental imagery ability and mental toughness among boxers and chess players in the age range of 15 - 25 years. Mental imagery ability and mental toughness of Male and female participants were also explored. The participants were comprised of 200 boxers and chess players ranging between the age of 15 - 25 years. Individuals who are of the ages 15-25 years and are boxers and/ or chess players but are unwilling to participate in the study, and any person diagnosed with or with a past history of neurological and/or psychiatric illness. The scales used for the study are Sport Imagery Ability Questionnaire (SIAQ) and Sports Mental Toughness Questionnaire (SMTQ). The results indicated that a weak positive correlation exists between the variables of Imagery Ability and Mental Toughness. Further analysis showed that there is a significant difference between the mental imagery ability and mental toughness of boxers and chess players. But, there is no significant difference between the mental imagery ability and mental toughness of men and women. Similarly, there is no significant difference between the mental imagery ability and mental toughness of the different age groups. Therefore, this study has proven the relationship between mental imagery ability and mental toughness. Thus, sports players especially boxers and chess players can be helped to improve their mental toughness using their mental imagery capabilities and thus improving their overall game through psychological strategies.

Introduction

Cornelius describes mental imagery as "the cornerstone of sports psychology interventions". The Imagery ability is explained as "an individual's capability to form any vivid, controllable imagery with which they can engage, and which can also be retained for enough time that it affects the desired rehearsal" (Morris et al., 2005). Mental imagery is thus one of the few psychological skills whose use can bring about a major difference in one's gameplay, and can even create a difference in winning and losing.

Similarly, mental toughness helps an individual to stay calm under pressure and to overcome adversities with solutions. Mental toughness is a vital component that determines success in the sports field and thus it can be used to improve an athlete's overall performance and personality, as shown by many studies, one of which involved ten Olympians, the study reported mental toughness is one of the highestranked psychological characteristics that determine successful performance (Gould, Dieffenbach, & Moffett, 2002).

Indian research studies on this topic have proven to be insufficient as they often lacked respondents. Sports Psychology has been lesser explored in India and very few studies are present that have boxers and/or chess players as their population.

Moreover, these two variables have also been proven to be an important factor for sportspersons in their game, the present research hopes to improve psychological training for sportspersons by aiming to find the correlation between mental toughness and mental imagery to solidify and improve the techniques of the associated sport, which will help improve the performance of sportspersons, especially in the Indian context among boxers and chess players.

Methodology

This study assessed the mental imagery ability and mental toughness among boxers and chess players in the age range of 15-25 years.

Sample

The study sample included 200 young adults selected through the purposive sampling technique by the criteria that they were either male or female boxers or chess players of the ages 15-25 years. The exclusion criteria were that they were not previously or currently diagnosed with any neurological and/or psychiatric illness.

Tools Used

Socio-demographic form

Prepared by the researcher to get the sociodemographic details namely, the initials, the gender of the participant, the age of the participant, and the game the participant plays, either chess or boxing.

Sport Imagery Ability Questionnaire (SIAQ)

Sport Imagery Ability Questionnaire (SIAQ) was developed by the Birmingham Research in Imagery and Observation (BRIO) group. This is a 15-item questionnaire to assess five types of athlete imagery ability: skill imagery ability, strategy imagery ability, goal imagery ability, affect imagery ability, and mastery imagery ability; along with the Global measure of sports imagery ability (the overall imagery ability). Athletes are asked to image each item and then rate how easily they are able to image each scenario in relation to their sport. Ratings are made on a 7- point Likerttype scale ranging from 1 (very hard to image) to 7 (very easy to image).

Sports Mental Toughness Questionnaire (SMTQ)

Sports Mental Toughness Questionnaire (SMTQ) by Sheard and Golbi (2009) measures the mental toughness of sportspersons., This scale has 14 questions which are scored on a 4-point Likert scale ranging from 1 = (Lowest) = not at all true; to 4 =(Highest) = very true. This scale also has 3 subscales namely, Confidence, Constancy, and Control.

Procedure

The participants of the study were reached out to using the inclusion and exclusion criteria while using the purposive sampling technique. Informed consent was to be taken from the participants before filling out the questionnaires. The research protocols were administered to the participants along with verbal instructions. They included the consent form, socio-demographic form, Sport Imagery Ability Questionnaire (SIAQ), and Sports Mental Toughness Questionnaire (SMTQ). Debriefing was conducted for all the participants of the study and further counseling can be given if requested. The data from this method was then tabulated to conclude the results of the research using SPSS software. Accordingly, the data collected was majorly non-parametric, so Spearman's Correlation and T-test, and Mann Whitney U Test have been used to test the hypotheses of the study. Data was to be statistically analyzed by a statistical package for social sciences. 8. Conclusions were made according to the results of the analysis.

Data Analysis

Quantitative data were coded and analyzed using the Statistical Package for the social sciences (SPSS) Version). Frequency distributions, percentage analysis, mean, median, and

standard deviation were the descriptive statistics that were used. Spearman's Correlation, Independent t-test, and Mann Whitney U test were used to find significant differences between the means of variables.

Result

Table 1

Number of Participants from each Sport

Sociodemographic	n	%
Sports		
Boxing	82	41.0
Chess	118	59.0
Gender		
Male	97	48.5

Table 2

Correlations for Study Variables

Variable	**M**	**SD**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Global Imagery Ability	4.67	1.02	-	.815**	.756**	.876**	.796**	.784**	.332**	.497**	-.002	.017
Goal Imagery Ability	4.67	1.151	.815**	-	.474**	.671**	.508**	.556**	.269**	.359**	.015	.013
Strategy Imagery Ability	4.51	1.15	.756**	.474**	-	.650**	.544**	.536**	.273**	.424**	-.008	.010
Skill Imagery Ability	4.68	1.22	.876**	.671**	.650**	-	.660**	.597**	.300**	.399**	.068	.046
Affect Imagery Ability	5.08	1.15	.796**	.508**	.544**	.660**	-	.555**	.198**	.344**	-.068	.017
Mastery Imagery Ability	4.42	1.18	.784**	.556**	.536**	.596**	.555**	-	.296**	.466**	.006	-.005
Mean Mental Toughness	2.76	0.40	.332**	.269**	.273**	.300**	.198**	.296**	-	.76**	.658**	.585**
Confi-dence	2.85	0.56	.497**	.356**	.424**	.399**	.344**	.466**	.76**	-	.276**	.096
Constan-cy	2.63	0.50	-.002	.015	-.008	.068	-.068	.006	.658**	.276**	-	.292**
Control	2.75	0.60	.017	.013	.010	.046	.017	-.005	.585**	.096	.292**	-

**p<0.05

It was found that there is a significant relationship between Global Imagery Ability and Mean Mental Toughness, rs (198) = .332**, p< 0.01. Thus, a weak positive correlation exists between the variables of Imagery Ability and Mental Toughness.

Table - 3

Results of T-Test for Global Mental Imagery Ability among Boxers and Chess players

Variables	Boxing			Chess			t(198)	p	Cohen's
	n	m	sd	n	m	sd			d
Imagery Ability	82	4.97	1.05	118	4.46	0.95	3.533	.001*	0.508

* p < .05

The results indicated that the mental imagery ability of boxers (*M* = 4.97, *SD* = 1.05) is significantly higher than chess players (*M* = 4.46, *SD* =0.95), *t(198)*=3.533, *p* =.001*. Medium effect size has been inferred, *Cohen's d = 0.508.*

Table - 4

Results of Mann-Whitney U Test for Mental Toughness among Boxers and Chess Players

Variables	Boxing			Chess			Mann-Whitney U	p	Z
	N	M	IQR	N	M	IQR			
Mental Thoughnes	82	2.89	0.50	118	2.71	0.45	3504.00	.001*	-3.321

* p < .05. M - Median, IQR - Interquartile Range

As shown in Table 4, the results indicated that the mental toughness of boxers (*M* = 2.87, *SD* = 0.34) is significantly higher than chess players (*M* = 2.68, *SD* =0.42), *U* = 3504.00, *p* =.001*.

Table - 5

Results of T-Test for Global Mental Imagery Ability among Male and Female Participants

Variables	Male			Female			t(198)	p	Cohen's
	N	M	SD	N	M	SD			d
Imagery Ability	97	4.82	1.19	103	4.54	0.81	1.941	.054	0.275

As given in Table 5, the results indicated that the mental imagery ability of men (M =4.82, SD = 1.19) is the same as women (M = 4.54, SD = 0.81), t(198) = 1.941, p =.054.

Table - 6

Results of Mann-Whitney U Test for Mental Toughness among Male and Female Participants

Gender	Male			Female			Mann Whitney U	p	Z
	N	M	SD	N	M	SD			
Mental Toughness	97	2.80	0.35	103	2.71	0.43	4351.00	.114	-1.579

* p < .05

As represented in Table 6, the results indicated that there is no significant difference in the mental toughness of men (*M* =2.80, *SD* = 0.35) and women (*M* =2.71, *SD* = 0.43), *U* = 4351.00, *p* =.114.

Table - 7

Results of T-Test for Imagery Ability among Different Age Groups

Age Group	15-19 years			20-25 years			T(198)	p	Cohen's
	N	M	SD	N	M	SD			d
Imagery Ability	86	4.69	1.02	114	4.66	1.02	.217	.829	0.031

* p < .05

As indicated by Table 7, the results indicated that there is no significant difference in the mental imagery ability of participants of the age group 15- 19 years (*M* =4.69, *SD* = 1.02) and 20-25 age group (*M* = 4.66, *SD* = 1.02), *t (198)* = 0.217, *p* = 0.829.

Table 8

Results of Mann-Whitney U Test for Mental Toughness among Different Age Groups

Age Group	15-19 years			20-25 years			Mann Whitney U	p	Z
	N	M	IQR	N	M	IQR			
Mental	86	2.71	0.36	114	2.82	0.59	4390.00	.205	-1.266

Toughness					

* p < .05. M - Median , IQR - Interquartile Range

As shown in Table 8, the results indicated that there is no significant difference in the mental toughness of the participants of the age group 15 - 19 years (*M* =2.73, *SD* = 0.37) and 20 - 25 years (*M* =2.78, *SD* = 0.42), *U* = 5414.00, *p* =.205.

Discussion

The goal of this study was to assess the mental imagery ability and mental toughness among boxers and chess players in the age range of 15-25 years. The participants of this study were primarily men and women who either played chess or were boxers. Only those who fit in the age group of 15-25 years were allowed to participate in the study.

The findings showed that a positive but weak correlation exists between the variables of Imagery Ability and Mental Toughness. This is in congruence with the findings that imagination in sports has a significant positive contribution in explaining its effect on mental toughness (Geikie, 2016; Ugur, 2021; Sural, Güler, and Çar 2021).

In order to explore the weak positive correlation between mental imagery ability and mental toughness, the correlation of the subscales was also found. These findings were in agreement with The Sports Imagery Ability Questionnaire Manual as they are all subscales of the questionnaire-Sports Imagery Ability Questionnaire. (Williams & Cumming, 2011).

The results also indicated a strong positive correlation between the variables - Mean Mental toughness and Confidence and a substantial positive correlation between Mean Mental toughness and the variables - Constancy and Control. Further, a weak positive correlation between the variables Confidence and Constancy, Confidence and Control, and Constancy and Control was established. These conclusions were also supported by the construct validation of the Sports Mental Toughness Questionnaire as they are all the subscales of the Sports Mental Toughness Questionnaire (SMTQ). (Sheard, Golby, & van Wersch, 2009)

The results indicated that the mental imagery ability of boxers is significantly higher than chess players. This is a different conclusion from the earlier research which showed that there is no difference in the mental imagery ability of contact and noncontact sport (Di Corrado, Guarnera, Vitali, Quartiroli, Coco, 2019).

The results indicated that the mental toughness of boxers is significantly higher than chess players. Our findings are in congruence with the previous findings of a significant difference

between the mental toughness of different contact sports and non-contact (Khan and Jiju, 2021).

The results indicated that the mental imagery ability of men and women is the same. Thus, there is no significant difference between the mental imagery ability of men and women. The results further proved that there is no significant difference in the mental toughness of men and women. The results also showed that there is no significant difference in the mental imagery ability of participants of the age group 15-20 years and 20-25 age group. Thus, there is no significant difference between the mental imagery ability of the different age groups. The final analysis indicated that there is no significant difference in the mental toughness of the participants of the age group 15-20 years and 20-25 years.

Implications and Limitations

The study has the following limitations. Firstly, as the samples were boxers and chess players, most of the data collected was on an online basis and through sending the links across to the various clubs after talking to their management. Second, there was no qualitative interview with the participants which could have provided more insight into the study. Third, the sample size of boxers and chess players is uneven, which might have contributed to biased results. Fourth, the sample size of males and females is uneven, which might have contributed to biased results. Fifth, the sample size of the two age groups is uneven, which might have contributed to biased results.

Another set of limitations due to the exclusion criteria set for the study is as follows. Firstly, as the people who didn't belong to the age group of 15-25 years have been excluded in this study the variable correlation for the players not belonging to this age group has been left. Second, this study has also only focussed on boxers and chess players thus, for other sports and non-athletes the correlation and the comparison of the variables were ignored. Third, this study also did not include any persons with any psychiatric disabilities and thus it was not inclusive of people with disorders.

This research also has important implications on how coaches can help players improve their mental toughness using their mental imagery capabilities and thus improving their overall game through psychological strategies. Secondly, as this study shows the correlation between mental imagery and mental toughness more research on the predictive capacity of these two variables can be done. Thirdly, gender bias-free workbooks/ modules for boxers and chess players can be created on this topic as findings showed no difference in abilities among male and female participants.

Conclusion

The conclusions drawn from the results of the study are presented below -

The present study assessed the relationship between mental imagery ability and mental toughness using correlational analysis. It was found that there is a weak positive correlation between mental imagery ability and mental toughness. The study also measured the mental imagery ability between boxers and chess players. It was found that boxers have better mental imagery ability than chess players. The study also measured the mental toughness between boxers and chess players. It was found that boxers have better mental toughness than chess players. The study also measured the mental imagery ability of male and female players. It was found that mental imagery ability between male and female players is not significantly different. The study also measured the mental toughness of male and female players. It was found that mental toughness between male and female players is not significantly different. The study also measured the mental imagery ability between two age groups. It was found that mental imagery ability between the two age groups is not significantly different. The study also measured the mental toughness between two age groups. It was found that mental toughness between the two age groups is not significantly different. Therefore, this study has proven the relationship between mental imagery ability and mental toughness. Thus, sports players especially boxers and chess players can be helped to improve their mental toughness using their mental imagery capabilities and thus improving their overall game through psychological strategies.

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