

Building a Mental Wandering Scale for Handball Players

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Abstract:

This study includes an introduction which highlights the importance of developing a mental wandering scale for handball club players in Al-Muthanna Governorate. The third chapter details the research methodology and procedures. The research population and sample consisted of 120 handball club players in Al-Muthanna Governorate. The researcher used several statistical methods to process the results obtained. After presenting and discussing the results, several conclusions were reached, most notably the development of a mental wandering scale for handball players in Al-Muthanna Governorate.

Introduction and Importance of the Research:

Mental wandering is a cognitive variable related to the attention process, crucial for learning[1].By reducing attention distractions, mental wandering plays a significant role in any educational system[2].Our ability to maintain sustained attention significantly impacts our success in class or other activities[3]. Mental wandering occurs automatically and quickly in tasks requiring sustained attention, especially in handball[4].Its importance is evidenced by many studies exploring its relationship with various variables and its impact on the learning environment, directly influencing the acquisition of sports skills, particularly in handball. Lack of concentration or attention distractions has multiple causes and manifestations, requiring active and alert centers in the brain[5]. Any factor affecting this neural circuit can lead to attention distraction and wandering. The importance of this research lies in developing a mental wandering scale for handball players in Al-Muthanna Governorate[6].

Research Problem:

Mental wandering is one of the obstacles to players' learning, negatively affecting potential learning outcomes by hindering their success in assigned tasks and activities. This weakens players' skill acquisition and effective learning in handball. Additionally, it affects the player's engagement in the learning environment, reducing their participation and integration during play. Increased mental

wandering correlates with decreased engagement in play, potentially disrupting team performance and leading to losses. This prompted the researcher to conduct this study.

Research Objectives:

To develop a mental wandering scale for different playing positions of handball players in Al-Muthanna Governorate.

Research Domains:

Human domain: Handball players in Al-Muthanna Governorate.

Temporal domain: From April 17, 2023, to September 27, 2023.

Spatial domain: Handball courts.

3. Research Methodology and Procedures:

Research Methodology:

The researcher used the descriptive survey method suitable for the research nature.

Research Population and Sample:

The research population included 120 players from six handball clubs in Al-Muthanna Governorate: Samawah, Al-Muthanna, Salman, Khidr, Rumaitha, and Thawrat Al-Ashreen.

Research Tools and Data Collection Methods:

Research Tools

1. Sample
2. Mental wandering scale for handball
3. The Interview
4. Sources and references
5. Data extraction forms

Main Research Procedures:

Steps to construct a handball mental wandering scale:-

To achieve the goal of the research, which is to build a measure of mental wandering with different handballs, the researcher followed the following steps:

The purpose of constructing the handball mental ambulation scale: -

The purpose of constructing the scale is to find a means capable of measuring the measure of mental ambulation in handball for players of Muthanna Governorate clubs.

Determine the phenomenon to be measured:

The phenomenon that it aims to measure is to determine the mental wandering of the players of the Muthanna Governorate clubs.

Preparing items for the mental wandering scale on handball:-

To develop the initial formula for the handball mental wandering scale, the following methods were followed:

Review the relevant sources:

After examining the researcher's knowledge of a group of sources in the field of general psychology, sports psychology, and handball, and studying this literature, the researcher formulated a number of paragraphs.

Review of multiple psychological measures:

By benefiting from research and theoretical frameworks that attempted to explain mental wandering in formulating paragraphs related to the handball mental wandering scale. In formulating the paragraphs of the list, he also benefited from mental wandering tests and the sources on which the list was built.

Analysis of the scale items

The two extreme groups methods and the relationship of the item score to the total score of the scale are two appropriate procedures in the process of analyzing items to determine the items with high distinction, "as discriminatory power refers to the ability to differentiate or distinguish between individuals who obtain high scores and individuals who obtain low scores on the same scale." (1), while the correlation between the score of each item and the total score of the scale indicates the extent of homogeneity of the items in their measurement of the trait, meaning that this method provides a homogeneous measure in its items. From this we find that analyzing the items "means keeping the good items in the test." (2). So the researcher used these two methods.

The two peripheral groups

After the researcher corrected the players' answers on the mental wandering scale according to the weights given to each alternative, and determined the total score for each questionnaire, the researcher arranged the total scores obtained by the members of the construction sample, amounting to (120) players, in descending order, and then chose a percentage of (27%)) of the questionnaires with the highest scores and (27%) of the questionnaires with the lowest scores. The number of questionnaires for the upper and lower groups is (58), with (29) questionnaires for the upper group and the same for the lower group. The scores of the upper group ranged between (146-163), while the scores of the lower group ranged between (110-139). Then the researcher calculated the discriminatory power of each item answered by the player on the mental wandering scale using the t-test (for independent samples) to test the differences between the upper group and the lower group for the scale's (41) items using the Statistical Portfolio for the Social Sciences (SPSS). The tabulated (T) value is considered an indicator of the excellence of the paragraph, and Table (1) shows this.

Table (1) shows the Arithmetic Means and Standard Deviation of the Upper and Lower Groups and the Results of the T-Test to Calculate the Discriminatory Power of the Scale Item

Item Discrimination	Calculated t-value	Lower Group Mean		Upper Group Mean		Item Number
		SD	M	SD	M	
High	14.059	0.628	2.586	0.484	4.655	1
High	14.770	0.817	2.103	0.471	4.690	2
High	15.644	0.842	2.069	0.412	4.793	3
High	14.719	0.797	2.276	0.436	4.759	4
High	14.864	0.805	2.172	0.455	4.724	5
High	14.626	0.842	2.069	0.471	4.690	6
High	16.139	0.823	2.035	0.412	4.793	7
High	14.200	0.817	2.103	0.494	4.621	8
High	19.122	0.491	2.207	0.484	4.655	9
High	15.996	0.845	2.000	0.412	4.793	10
High	14.770	0.817	2.103	0.471	4.690	11
High	34.940	0.441	2.138	0.000	5.000	12

High	18.894	0.655	2.000	0.436	4.759	13
High	12.327	0.889	2.172	0.509	4.517	14
High	14.538	0.805	2.172	0.471	4.690	15
High	18.625	0.557	2.103	0.484	4.655	16
High	14.741	0.753	2.069	0.506	4.552	17
High	13.802	0.833	2.138	0.494	4.621	18
High	14.600	0.778	2.053	0.506	4.552	19
High	19.113	0.632	1.552	0.501	4.414	20
Item Discrimination	Calculated t-value	Lower Group Mean		Upper Group Mean		Item Number
		SD	M	SD	M	
High	14.538	0.805	2.172	0.471	4.690	21
High	13.599	0.688	2.483	0.494	4.621	22
High	16.139	0.823	2.035	0.412	4.793	23
High	12.122	0.491	2.207	0.484	4.655	24
High	14.120	0.875	2.138	0.455	4.724	25
High	16.139	0.823	2.035	0.412	4.793	26
High	14.991	0.753	2.069	0.501	4.586	27
High	13.975	0.848	2.172	0.471	4.690	28
High	15.029	0.789	1.862	0.509	4.483	29
High	15.490	0.786	1.759	0.506	4.448	30
High	17.123	0.690	1.759	0.509	4.483	31
High	18.706	0.471	2.310	0.484	4.655	32
High	15.355	0.756	2.000	0.501	4.586	33
High	15.219	0.806	2.172	0.436	4.759	34
High	15.093	0.817	2.103	0.455	4.724	35
High	15.332	0.753	1.931	0.509	4.571	36
High	14.217	0.568	2.586	0.501	4.586	37
High	14.972	0.845	2.000	0.471	4.690	38
High	14.668	0.833	2.138	0.455	4.724	39
High	17.665	0.658	1.828	0.506	4.552	40
High	15.245	0.731	2.035	0.506	4.552	41

It is clear from Table (1) that the calculated (t) value ranged between (12.122-34.940), but when choosing the tabular (t) value and in front of the degree of freedom (56) and the significance level (0.05%) (1.68), we find that it is greater than the tabular (t) value. The significance of the difference between the two arithmetic means for each of the two groups (higher and lower) affects all paragraphs, and this means that all paragraphs are distinguished by their training strength.

The relationship of the circle to the total degree of measurement

It is not surprising that there is more than one way to analyze the scale items, and the criteria for correlational difference between all the scales is one of these errors, as there is a difference between each item and the total score of the scale. The correlation agreement was used between each item and the total score for the measure of agreement between members and the total score for (120) players. Results were obtained that show in Table (1) that the correlation values between the items of the scale and the total score were limited to (-0.025). (0.402) and you calculate the significance of the correlation agreements achieved by testing them statistics for the t-test, and the lowest value is proportional (-0.256) - (4.499) and knowing the significance of the correlation, strength of agreement (T), tabular degree of freedom (105), interpretation of the significance (5%), which amounts to (1.66). In light of that rejection, (10) decided that there was no significant relationship

between the item and the total score of the measure, and thus the number of items on the scale became (31).

Table (2) shows the correlation and score of each item with the total score for all sample members

Significant correlation	Calculated (T) value *	correlation	No
Insignificant	1.239	0.120	1
Significant	2.942	0.276	2
Insignificant	1.249	0.121	3
Significant	1.929	0.185	4
Significant	3.117	0.291	5
Significant	2.646	0.250	6
Significant	2.190	0.209	7
Significant	3.509	0.324	8
Significant	4.499	0.402	9
Significant	2.466	0.234	10
Significant	2.623	0.248	11
Significant	2.168	0.207	12
Significant	3.607	0.332	13
Significant	2.322	0.221	14
Insignificant	0.297	0.029	15
Significant	2.377	0.226	16
Significant	2.059	0.197	17
Insignificant	1.312	0.127	18
Insignificant	1.301	0.126	19
Significant	3.558	0.328	20
Significant correlation	Calculated (T) value	correlation	No
Significant	2.411	0.229	21
Significant	2.016	0.193	22
Insignificant	0.256	- 0.025	23
Significant	1.693	0.163	24
Significant	3.070	0.287	25
Significant	1.704	0.167	26
Insignificant	1.291	0.125	27
Significant	2.223	0.212	28
Insignificant	1.239	0.120	29
Insignificant	0.791	0.077	30
Significant	2.135	0.204	31
Significant	1.682	0.162	32
Insignificant	0.256	0.025	33
Significant	2.422	0.230	34
Significant	3.729	0.342	35
Significant	3.023	0.283	36
Significant	2.793	0.263	37
Significant	2.289	0.218	38
Significant	2.966	0.278	39
Significant	3.246	0.302	40

Significant	3.258	0.303	41
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Scientific Foundations of the Scale

Validity

To ensure the validity of the scale, the researcher used two important indicators appropriate to the nature of the research:

Content Validity:

This type of validity, especially face validity, was achieved by presenting the psychological stress scale to a group of experts and specialists in psychology, educational sciences, sports psychology, and measurement and evaluation. They approved the validity of the scale items and confirmed that the items appropriately represented the domains they were intended to measure.

Construct Validity:

The researcher verified the construct validity of the scale using two methods:

First: Extreme Groups Method:

This method was used to calculate the discriminative power of the scale items. The high discrimination ability of the items serves as evidence for construct validity.

Second: Item-Total Correlation:

The researcher also used the correlation between each item score and the total score of the scale to verify construct validity.

Reliability

The researcher used two methods to determine the reliability of the scale:

Split-Half Method:

This method divides the scale items into two halves: odd-numbered and even-numbered items. To verify the homogeneity of the two halves, the F-ratio was calculated, yielding a value of 1.059. Comparing this with the table value indicated no significant difference (random difference), thus confirming homogeneity between the two halves. Pearson's correlation coefficient was then calculated between the scores of the two halves using the main experiment sample of 107 players. The correlation coefficient was 0.760. To determine the overall reliability, the Spearman-Brown coefficient was calculated, resulting in a value of 0.863, indicating good reliability.

Cronbach's Alpha:

The researcher analyzed the responses of all 107 players using Cronbach's Alpha. The coefficient for the overall scale was 0.753, significant at the 5% level, indicating internal consistency of the scale.

Main Experiment:

The researcher conducted the main experiment on the sample of 120 players from Sunday, September 3, 2023, to Wednesday, September 6, 2023. Data were then entered into extraction forms for statistical analysis.

Statistical Methods:

The researcher used the Statistical Package for the Social Sciences (SPSS) for data analysis.

Presentation, Analysis, and Discussion of Results:

The results led to the development of the mental wandering scale for youth handball players.

5. Conclusions and Recommendations

Conclusions:

The study successfully developed a mental wandering scale for handball players in Al-Muthanna clubs.

Recommendations:

1. Utilize the mental wandering scale to assess mental wandering among handball players in Al-Muthanna clubs.
2. Use the mental wandering scale to inform educational and training programs for handball players.
3. Encourage coaches and researchers to adopt the mental wandering scale for other activities.

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