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ASSESSMENT OF ATHLETE CONCENTRATION VIA APPLICATION: VALIDITY, RELIABILITY AND CATEGORIZATION

Sumbara Hambali[1], Veny Juniarni Hardi[2]
STKIP Pasundan[1,2]
sumbarahambali8@gmail.com[1], venyjunihardi@gmail.com[2]

Abstract
The purpose of this study was to determine the feasibility of athletes' concentration instruments by finding their validity and reliability levels and categorizing their concentration levels. The method used is quantitative descriptive with a survey approach and uses a type of trial design. The subjects of this study were 20 sports students who were members of the Handball Student Activity Unit at STKIP Pasundan. The instrument tested is a concentration test in the Concentration Grid Test (CGT) application developed by the Stalwart Group LLC company with a total of 36 boxes, consisting of 6 rows and 6 columns. The research data was collected using the test method, where the test was carried out as many as two repetitions. This type of data analysis uses the Pearson correlation method approach for validity, which analyzes the data of the first test result with the average of the test results, while for reliability it uses the test-retest technique and for the determination of categorization using the interval class length search approach technique. The results of the study found that the validity value for this instrument is r = 0.980 and the value for reliability is r = 0.931, so this is included in the very high category. As for the categorization, it is divided into five categories, namely very good, good, medium, less and less once.

Keywords: *Assessment; Concentration; Categorization; Reliability; Validity*

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Correspondence Author: Sumbara Hambali, STKIP Pasundan, Indonesia.
E-Mail: sumbarahambali8@gmail.com

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INTRODUCTION

Concentration is one of the psychological aspects that plays an important role in the world of sports, because this is one of the psychological factors that can support success in sports activities (Russian & Field, 2015). Concentration is a person's ability to be able to focus the mind on information that is focused on a particular object in a certain time (Wulf & Lewthwaite, 2016). Concentration is the ability to focus attention on a certain thing that is not disturbed by irrelevant internal or external stimuli (Jannah, 2017). Concentration is an ability where a person can focus on one thing (Al-Zoubi & Younes, 2015), and it becomes a

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necessary thing in various activities that become a person's routine every day (Supriatna et al., 2021).

In the world of sports, concentration becomes an important thing in every activity, especially in athletes. Concentration is a mental aspect that is important for an athlete's success in performing at their best (Yachsie et al., 2021). Concentration is an athlete's ability to focus his attention and mind only on information that is essential to his or her successful performance in a match (Aguss &; Yuliandra, 2020), with reduced or disrupted concentration of athletes during training, let alone matches, various problems and results will arise (Mardhika & Dimyati, 2015; Taufik, 2019). Concentration refers to how athletes always focus on the activities they do, so that the targets they achieve can be done optimally (Krissanthy et al., 2020). The level of concentration that athletes have can help to focus on doing a specific skill that will be done (Sarifudin et al., 2023). Therefore, to achieve good achievements requires good concentration (Yazid et al., 2016), an optimal achievement can be achieved with optimal concentration, not only for individual sports, but also in team sports (Vast et al., 2010).

The importance of this concentration indicates that the level of concentration for each athlete is very necessary to know. Actually, instruments or measuring instruments to evaluate a person's concentration level are available, which are well-known and often done are *Grid Concentration Exercise* created by D.V Harris and B.L Harris (1998), where the instrument has 100 squares containing numbers 00-99 randomly and has a validity value of 0.96 and a reliability value of 0.79 (Taufik, 2019; Yazid et al., 2016). Some other studies still use the instrument as a tool to measure concentration and have a range of categorization from very less to very good (Cahya et al., 2021; Kadir et al., 2023; Kharisma et al., 2021). Although the instrument can assess a person's concentration level, it feels like it is worth updating, because its needs and implementation require enough time and a lot of stationery.

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Now there are actually more modern concentration level assessments and do not require equipment such as stationery, paper and must be printed, this concentration test is application-based which the author feels is quite modern and will be relevant to the times, namely the *Concentration Grid Test (CGT).* Basically, this test is carried out almost the same as the type of *Grid Concentration Exercise test,* where the tester only needs to choose numbers from the smallest to the largest. But the difference is, in this CGT application the number of numbers or columns can be set, then the tester only clicks on the numbers in order of smallest to largest, then appears the length of time taken to complete the test. This seems to be very simple and practical, because only using *a smartphone* concentration assessment can be seen.

But the weakness of this application is that there are no test results or information on the level of validity and reliability of this test, then there is also no categorization that can assess whether the tester has a good or bad level of concentration. Assessment results only appear based on the length of time taken to complete the test. This is where it may be the interest of researchers to find out the level of validity, reliability and try to make a categorization to assess the level of concentration of athletes, so that it is hoped that later it will produce a new valid and reliable concentration assessment instrument. This is because a valid instrument means that the measuring instrument will get valid data, meaning that the measuring instrument can measure what should be measured (Hidayati &; Listyani, 2010). In addition, later this research also aims to produce new and more modern concentration assessment instruments in accordance with the times.

METHOD

The research method uses a descriptive method with a survey approach, because basically researchers want to know directly the state of the data generated from respondents / participants. As for the research design using a trial design, which is a research design used to test the validity and reliability of a measuring instrument (Tumangger et al., 2024). The participants in this study were sports

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students who were members of the Student Activity Unit of the handball branch at STKIP Pasundan as many as 20 people.

For instrument testing is the Concentration Grid Test (CGT) application developed by the company Stalwart Group LLC with a number of boxes of 36 boxes, consisting of 6 rows and 6 columns. Here are some views of the application:

Figure 1. Concentration Grid Application

The research data were collected using the test method. Measurements were carried out by the researchers themselves to the participants twice, carried out in the multipurpose field of STKIP Pasundan Cimahi. The research data were analyzed using the Pearson correlation method approach for validity, i.e. analyzing the data of the first test result with the average of the test results. As for reliability using the test-retest technique, which is analyzing the data of the first test results with the second test. Furthermore, to see the level or interpretation of the validity and reliability of this instrument is reviewed based on the following table:

Table 1. Interprestation of Validity and Reliability (Arikunto, 2012)

Correlation Coefficient	Criterion
0,81 – 1,00	Very High
0,61 – 0,80	High
0,41 – 0,60	Moderate
0,21 – 0,40	Low
0,00 – 0,20	Very Low

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As for determining categorization using the interval class length search approach technique, which is by first finding a range and determining many classes (its categorization).

RESULT AND DISCUSSION

Result

Based on the research design and also the stages of data testing, the data results obtained are first categorizated for the concentration level of five categories / many classes (MC), starting from Very Good, Good, Medium, Less, and Less Once. Categorization is made in advance based on the results of the following trial tests:

Table 2. Preliminary Trial Results Data

ID	Grid Units	Column	Row	Elapsed Time
1	36	6	6	00:41.00
2	36	6	6	00:48.12
3	36	6	6	00:45.06
4	36	6	6	00:44.95
5	36	6	6	01:05.69
6	36	6	6	00.47.57
7	36	6	6	01:09.88
8	36	6	6	00:44.41
9	36	6	6	00:55.50
10	36	6	6	00:46.27
11	36	6	6	01:02.55
12	36	6	6	00:46.55
13	36	6	6	00:33.77
14	36	6	6	00:42.05
15	36	6	6	00:35.58
16	36	6	6	00:33.75
17	36	6	6	00:55.12
18	36	6	6	00:41.01
19	36	6	6	00:34.22
20	36	6	6	00:42.94

Based on the data in table 2, the interval length range is made first by first finding the score range (R), which is the highest time gain with the lowest time. Then obtained the value of R = 69.88 – 33.75 = 36.13. Then determine the Interval Class Length (P) by means of P = R/BK, which means P = 36.13/5 = 7.23

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rounded to 7.2. Based on these calculations, it can be known that the time span for determining the categorization of athletes' concentration levels is as follows:

Table 3. Categorization of Athletes' Concentration Levels

Interval	Score	Category
≤ 33.75	5	Very Good
33.76 – 40.77	4	Good
40.76 – 47.77	3	Moderat
47.76 – 54.77	2	Less
≥ 54.78	1	Very Less

After the categorization is determined, the next step is to retest the respondents as many as one repetition. This is to calculate the degree of validity and reliability of the concentration test, so that there are two tests, because for testing the degree of validity and reliability of a test at least two repetitions must be carried out (Nurhasan &; Cholil, 2011). After the second concentration test measurement, the results of the two measurements can be seen in table 3 below:

Table 4. Concentration Test Results

ID	Test 1	Score	Test 2	Score	Average Test Scores
1	00:41.00	3	00:40.50	4	3,5
2	00:48.12	2	00:47.77	3	2,5
3	00:45.06	3	00:45.86	3	3
4	00:44.95	3	00:45.05	3	3
5	01:05.69	1	00:55.19	1	1
6	00.47.57	2	00.46.71	3	2,5
7	01:09.88	1	01:02.15	1	1
8	00:44.41	3	00:44.14	3	3
9	00:55.50	1	00:50.11	2	1,5
10	00:46.27	3	00:46.61	3	3
11	01:02.55	1	00:55.35	1	1
12	00:46.55	3	00:44.57	3	3
13	00:33.77	4	00:33.64	5	4,5
14	00:42.05	3	00:40.03	4	3,5
15	00:35.58	4	00:33.31	5	4,5
16	00:33.75	5	00:33.48	5	5
17	00:55.12	1	00:53.04	1	1
18	00:41.01	3	00:40.83	3	3
19	00:34.22	4	00:33.75	5	4,5
20	00:42.94	3	00:40.71	4	3,5

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Table 5. Results of Validity and Reliability Calculations with Pearson

		X1	Y	X2
X1	Pearson Correlation	1	.980**	.931**
	Sig. (2-tailed)		.000	.000
	N	20	20	20

**. Correlation is significant at the 0.01 level (2-tailed).

Based on the results in the calculation of table 4 using the *pearson product moment* correlation test, where for the validity test data X uses the first test result and data Y uses the average test result, the value r = 0.980 is obtained. As for the reliability test using *test-retest analysis,* namely data X using the first test result and data Y using the second test result, so that the value r = 0.931 is obtained. Therefore, if you look at the criteria or interpretation of test results of validity and reliability of tests, this concentration instrument is included in the very high category.

Discussion

These findings reveal that this instrument has a very high level of validity and reliability. If analyzed from the results of each test, indeed the score results between the first test and the second test do not differ much. A good test or measuring instrument is a test that can measure what you want to measure and one indicator to see that is the consistency of the score obtained (Yusup, 2018; Zaenal Arifin, 2017). The results of this instrument are also felt to be easier and more practical and do not require difficult equipment, meaning that the measuring instrument must be economical and practical (Azwar, 2016).

The use of applications in this test is also considered very helpful and makes the test more flexible, but still obtained real-time data. The use of applications in an assessment is felt to be effective and efficient by appraisers (Puspitasari et al., 2021), With the help of the application as an appraisal, the appraiser does not need to spend funds to buy a lot of props such as paper and stationery (Falera, 2021). With this concentration assessment system, athletes will immediately know their concentration level and indirectly later this application can be used for training.

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Then based on the results of the validity and reliability test of the instrument which shows a very high valdity level, this indicates that the concentration measuring instrument using the 36-box Concentration Grid application (6 columns and 6 rows) and using the cathegorization that has been shown in table 2 can be used to measure the concentration level of athletes, especially in handball athletes with an age range between 19 – 22 years. This is because the testing of this instrument was tested on handball athletes on it. Therefore, although this study provides new information and measuring instruments, it is still limited only to handball athletes with an age range of 19 – 22 years, so here the researchers provide recommendations if other researchers want to use this instrument on different athletes, it is necessary to retest it to be more reliable the instrument performed.

CONCLUSION

Based on the results of the research and discussion that has been described, here the researcher concludes that this concentration assessment has a very high level of validity and reliability, so that this instrument can be used to measure the concentration of athletes, especially in handball athletes. However, due to the results of trials of this instrument that only use handball athletes as subjects, it seems that validity and reliability testing must be carried out again if it is to be used on athletes other than handball. Then here the researcher also provides additional recommendations that if other researchers want to repeat the results of the validity and reliability test of this instrument, it is necessary to do it on a larger number of subjects, so that the results of the instrument may be more valid and reliable.

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