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Developing Model and Psychological Competencies Scale of 100 Meter Runner Student Athletes

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ABSTRACT

The main aim of research is to develop model and instrument psychological competencies scale (PCS) of 100 Meter Student Athletes. This research use a mixed methods approach. 1st Study, used a qualitative approach, identifying the constructs and dimensions of elite 100 meter runner student athletes. Using literature review and interview of 2 elite athletes and 2 coaches. The results of the first study is psychological competencies model consists of goal setting, goal setting, motivation, concentration, emotion regulation, focus, self talk, self confidence, and persistence. Another result is 10 items of multidimentional measure of PCS. Each items in the scale were responded on five point level. Leveling describes psychological abilities based on behavior. 2nd Study, using a quantitative approach, instrument validation and reliability testing. We recruited 50, age 18-22 years from 100 meters runner student athletes voluntarily participated in this study. We assessed construct validity by examining how well the measures discriminated groups expected to differ based on their competencies, using Corrected Item-Total Correlation with a minimum limit of 0.300 to be declared a valid item. We assessed internal consistency of PCS using the Cronbach Alpha coefficient. The result of Corrected Item-Total Correlation obtained results All items are valid because they have a Corrected Item-Total Correlation value greater than the minimum limit of 0.300. The internal consistency of the (Cronbach's alpha coefficient) was 0.841. It can be concluded that PCS is valid and reliable for measuring for 100 meter runner student athlete.

INTRODUCTION

In today's modern society, the theme of competence develops in the fields of education, human resource management, education and training. It also penetrates the field of human resources in the field of sports. The discussion about people who are more sporty and have high performance becomes one of the topics of competency research (Duclos-Bastías et al., 2021; Novan et al., 2020). There are around 150 competency articles in the field of sports reviewed by Zhao (2018). Various researchers have provided different definitions over the years and this has given rise to ongoing debate. The first definition of competence is presented by McClelland who defines competence as a "personal trait or set" of habits that lead to more effective or superior work performance (Rahmawati et al., 2021).

In subsequent years further definitions can be found in research, for example, Lapina & Sceulovs (2014); Phillips & Martin (2021) defines competence as "the underlying person's characteristic, which results in effective and/or successfully or performance in work". In relation to Chouhan & Srivastava (2014); Romão & de Sá (2020) "competence is a skill and abilities; things you can do; gained through work experience, life experience, study or training." Clifford (2020); Frezza & Adams (2020) state that

competence is "a set of behaviors that play a role in the delivery of a desired or outcome.

Research on competence mainly follows three approaches, namely: independently developed. The behavioral approach focuses on attributes that go beyond cognitive abilities, such as self-awareness, self-regulation and social skills (Fernández-pérez et al., 2019). This approach argues that competence is essentially behavioral unlike personality or intelligence and can be taught through learning and development. The functional approach focuses on competence as a requirement for successfully fulfilling a task by limiting the term competence to the skills and knowledge required to perform the task (Prifti et al., 2017). The holistic/multi-dimensional approach describes competence as a collection of individual competencies required of an individual and organizational competencies required at the organizational level to achieve the desired results (Bratianu & Hadad, 2020). In this study we focus on the individual as a key factor in 100 meter runner student athlete's performance, analyzing a broad spectrum of competencies for individuals not only at the functional but also at the behavioral level. We did not define a list of skills to fulfill a specific task nor did we address organizational competence. In addition we would like to offer an overview of the competencies that must be taught to individuals to successfully work in achieving peak performance.

Researchers therefore apply a behavior-based approach because it offers the most suitable for our purposes, by providing also the possibility to describe the relationship between competencies as constructs on the one hand, and psychological constructs such as motives and personality traits on the other (Klendauer et al., 2012). For the purposes of this study we used Bartram's definition, which defines competence as: "a set of behaviors that play a role in the delivery of a desired outcome or outcome" (Chouhan & Srivastava, 2014; Kurz & Bartram, 2008). In this sense "competence is not behavior or performance in itself but a repertoire of available capabilities, activities, processes and responses that enable various job demands to be met more effectively by some people than by others" (Kurz & Bartram, 2008). The main research question is to seek answers for (a) the competency model for 100 meter runner student athlete superior sport performance and (b) the instrument to measure psychological competencies for superior 100 meter runner student athlete in sport performance.

RESEARCH METHOD

General Background

This research uses a mixed methods approach. This research will employ a two-phase mixed method approach which is exploratory sequential design. This research will begin with qualitative data collection and analysis, and then following with quantitative data collection and analysis (Creswell, 2014). By employing qualitative methodology at the initial stage of the study, the views from the professional chefs relative to successful culinary competencies can be better achieved. The research operational framework is shown in Figure 2.

The first stage in this research is the qualitative research method. The final result of this first stage is to find the dominant psychological aspect based on the sprinter's motion task, as a basis for finding a psychological competency model that is specifically suitable for sprinters. The procedure is carried out according to Table 1.

Table 1. Qualitative method procedure.

Approach	Stage I	Goal	Procedure
Qualitative	Collecting Data	Identification psychological competencies based on motion task	- Semi-Structured Interview - Observation - Document Material
	Qualitative Data Analysis	Developing of psychological competencies aspect	- Coding - Thematic analysis
	Qualitative result	Psychological competencies construct	

The second stage is quantitative research method. This method is a continuation of the qualitative method. Based on the results of the qualitative research methods mentioned above, then the preparation of theoretical models, preparation of instruments, instrument trials, and research models was carried out. The detailed steps are as shown in Table 2.

Table 2. Quantitative method procedure.

Approach	Stage II	Goal	Procedure
Quantitative	Developing instrument	Develop a competency instrument construct	Test instrument construct
	Instrument Reliability Validity Test	Testing the level of validity and reliability of the instrument	- Item Analysis - Correlation coefficient
	Quantitative result	Valid and reliable psychological competence instrument	Psychological Competence Scale (PCS)

Sample

The research subjects in stage 1 were 2 elite athletes and 2 coaches. The subjects in stage 2 were 50 national athletes who took part in the national championship recognized by the athletic union throughout Indonesia.

Instrument and Procedures

The research data were obtained through the following methods of participatory observation, interviews, documentation and psychological competence scale. Participatory observation aims to obtain qualitative data regarding effective movement tasks for sprinters. Participatory observation is observation in which the researcher is involved with the activity being observed or used as a source of research data. The activities observed were sprinters during practice and competition. While observing, the researcher was involved in what the sprinters were doing, and shared their joys and sorrows. It is hoped that through this participatory observation, the data obtained will be more complete, sharp and come to know the level of meaning of each behavior, each process and so on.

This research includes passive participation, active participation, and moderate participation. In passive participation, the researcher comes to the place where the activity is being observed, but the researcher is not involved in the activity (only limited

to observing or seeing). In active participation, researchers participated in doing what sprinters did, but not completely, only certain activities.

The interview aims to obtain qualitative data regarding aspects of psychological competence involved in the task of sprinting motion. In this study, semi-structured interviews were used. This interview technique is included in the in-dept interview category, in its implementation it is more free when compared to structured interviews. The purpose of this type of interview is to find problems more openly, where the parties invited to the interview are asked for their opinions and ideas.

The psychological competency scale (PCS) was compiled based on the results of first stage, a qualitative approach.

Data Analysis

Data obtained through qualitative research methods (observation, interviews, documentation) using thematic analysis. Thematic analysis based on data, namely collecting rough data from participants to be used as themes in the study. The steps are to determine the respondent, (in this case, the national elite 100 meter sprinter and coach), build the theme and code, and validate the code. Code validation process by comparing the differences in each respondent related to reliable themes. Themes that show differences will validate the themes that have been created and are considered valid when all themes include the diversity of information obtained in the study.

Data based on quantitative methods in the form of PCS were analyzed statistically using validity and reliability tests. Validity test using construct validity. Construct validity is validity related to the ability of a measuring instrument to measure the understanding of a concept being measured (construct). Estimation of construct validity was carried out by measuring the item score with the item total score (Azwar, 2016). Reliability testing is carried out on the selected set of items. Scale reliability is an index that shows the extent to which a scale can be trusted or reliable. The reliability of a measuring instrument shows the extent to which this measurement can provide relatively no different results when repeated measurements are made on the same subject, as long as the aspects measured in the subject have not changed (Azwar, 2009).

RESULTS AND DISCUSSION

Based on first stage, the qualitative approach in this reseach obtained the themes of initial goal setting, motivation, emotion regulation, concentration, focus on movement coordination, focus on movement efficiency, persistence, self-confidence, self-talk, and goal setting evaluation. Effective and ineffective relate to the construct to be measured and determine the critical incident technique. These data are converted into the dimensions of the 100-meter sprinter's motion task, ensuring that there is no overlap between the dimensions to be measured, and the indicator is a manifest of the dimensions to be measured. The results of this stage 1 aspects of psychological competence and the resulting instrument indicators are as Table 3.

Table 3. Aspects of psychological competence of 100 meter sprinters.

Aspects of Psychological Competence	Indicator
Goal setting Initiation	Determining the achievement of training targets
Motivation	Encouragement to achieve better targets
Emotion Regulation	Managing positive emotions before core workout

Aspects of Psychological Competence	Indicator
Concentration	Speed of reacting to cues, ability to choose attention
Focus on Coordination Task	Precise in paying attention to movement coordination
Focus on Efficiency Motion Task	Precise in paying attention to movement efficiency
Persisten	Persevere in completing an endurance training program
Percaya diri	Convinced by maximizing muscle strength
Self-talk	Do a positive appreciation in yourself through positive words
Goal setting Evaluation	Evaluation of training target achievement (performance)

The results of stage 2, in item analysis are estimated through the item discriminatory index parameter. The item discriminatory index was obtained through the correlation between the scores of each item with the total score so that it could be determined which items were eligible and which were not eligible to be included in the research scale. Calculations regarding the determination of items in the measuring instrument used use the item difference power index parameter using the SPSS (Statistical Product and Service Solution) program for windows version 13. Selection or basis for making item decisions that meet the differentiating power is seen from the corrected item-total correlation coefficient greater than 0.300 or can be reduced to 0.250 (Azwar, 2009). The results of the calculation of the item discrepancy test, a test of 10 items on the psychological competence scale of sprinters has a discriminating power index ranging from 0.341 to 0.641. The complete results are as in the Tabel 4.

Table 4. Results of the differentiating power of items.

Question	*Corrected Item-Total Correlation*	Value Limit	Description
Item 1	0,341	0,300	Valid
Item 2	0,393	0,300	Valid
Item 3	0,608	0,300	Valid
Item 4	0,564	0,300	Valid
Item 5	0,620	0,300	Valid
Item 6	0,550	0,300	Valid
Item 7	0,474	0,300	Valid
Item 8	0,516	0,300	Valid
Item 9	0,641	0,300	Valid
Item 10	0,445	0,300	Valid

The different power index standard used is 0.30. Based on these results, it can be said that all items are considered satisfactory. Reliability test. The amount of reliability is indicated by a number called the coefficient of reliability coefficient. Reliability is a translation of the word reliability which has the origin of the words rely and ability. Usually reliability is translated as reliability, trustworthiness, constancy, stability, and consistency. The basis of naming it is the concept of the extent to which the results of a measurement can be trusted. This can be shown if several times the implementation of measurements of the same subject group obtained relatively the same results, as long as

the aspects measured in the subject have not changed (Azwar, 2009). The resulting correlation coefficient is then matched with the interpretation table of the reliability coefficient proposed by Arikunto (2009) as Table 5.

Table 5. Interpretation of the reliability coefficient.

Reliability 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

Resource: Arikunto, S. (2009). Research Procedure. page 109.

The results of the analysis obtained that the Cronbach's alpha coefficient for psychological competence scale was 0.841. Referring to the interpretation table of the reliability coefficient from Arikunto (2009) as shown in Table 5. above, the reliability coefficient obtained from the PCS is very high.

CONCLUSION

The psychological competency model of the 100 meter fast student runner athlete includes initial goal setting, motivation, emotion regulation, concentration, coordination movement focus, motion efficiency focus, persistence, self-confidence, self-talk, and evaluation goal setting. Psychological Competency Scale (PCS) consists of 10 items with different power test items, having a discriminating power index ranging from 0.341 to 0.641. Cronbach's alpha coefficient for PCS is 0.841. It means that the reliability of PCS is classified as very high. Future research can be apply in another levels and samples.

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