Impact of Psychological Dynamics on Computation Performance of Short Distance Runners in Tirunesh Dibaba Sport Training Center

Fikadu Mitiku Tolesa
Ethiopian Youth Sport Academy.

Abstract

Introduction: Various psychological dynamics affects performance in athletics competitions. However, less is known about the impact of psychological dynamics on computation performance of short distance runners.

Objectives: The study was initiated to assess the impact of psychological dynamics on computation performance of short distance runners in Tirunesh Dibaba sport Training center. Methods: Whole athletes in sprinting discipline (N=48), male (n=31) and female (n=17) have been used as a population for this study. We used census sampling techniques. The result collected by questionnaire from the target respondents tabulated and analyzed using Mean and standard deviations (SD) as a statistical tool by the researcher.

Results: The multiple regression result shows that competitive performance is affected by a couple of psychological dynamics such as levels of stress and anxiety with 35.1% of variance ($R^2=.351$), $F=90.037$, $p < 0.05$). Levels of stress and anxiety moderately and positively impact emotions of competitive performance with effect sizes of ($R^2=.351$, $F = 90.037$ with Beta value ($B$) =1885, $p < 0.05$).

Conclusion: The present study established the association between psychological dynamics and competition performance among novice short distance runners. Psychological dynamics such as anxiety and stress are symptoms of low athletic performance indicating the mental health condition of athletes. These findings suggest the necessity to understand the impact of psychological dynamics on competition performance of short distance runners in the context of Ethiopia. Future research is required to inspect the mental health level of elit and novice athletes.

Keywords: Anxiety, Athletes, Stress, Short distance, Competitive performance

Introduction

Every athlete experiences some level of anxiety as they prepare for and compete in an athletics event (Juezan & Osorno, 2022). Evidence shows that the way an athlete manages their anxiety will often determine their level of success (Lopes Dos Santos et al., 2020). Similarly, the ability to relax under pressure becomes the basis of self-control and an effective tool for any athlete. Numerous athletes performed poorly in sport because they were unable to relax or maintain control (Brown et al., 2020). Athletes who control their behaviors, actions, and mental states have an advantage. Researchers have reported that over 50% of consultations among athletes at an Olympic festival were related to stress or anxiety problems (Reardon et al., 2019a).

According to (Arvinen-barrow, 2017) high levels of anxiety during competition are harmful, worsening performance and even leading to dropout. Therefore, it’s very important to know the level of anxiety, especially cognitive anxiety, in order to take all necessary preparation to reduce it. Evidence shows that competitive sport anxiety is commonly found in young athletes. These can be seen in the field of competition by being late starters, or false start, loose of concentration and not following orders.
from our official who comes from stress (Khalid, Z., Arooj, N., & Fatima, 2020). The current evidence would seem to indicate that predispositions to experience high or low competitive anxiety symptoms may have a mediating influence upon the interpretation of state anxiety response as either facilitating or debilitating to performance (Nixdorf et al., 2016).

Most of the time without understanding the nature of sports; athlete’s shows different kinds of emotions in competition and even training venues. Emotions are psychological and physiological responses that may occur automatically or in response to a specific event (Edwards et al., 2018). Our good and bad results in athletics competition and even as a whole in sport depend up on our feelings (emotions) which appear at a time of competition. According to (Olafsen et al., 2018) success and failure in competitive games and sports depend on series of emotions. Uncertainty causes anxiety in athletes and enables them to feel worried, tense, stressed and fear prior or during a competition. Additionally, the significance of the event, level of competition, and crowd contribute to athletes’ anxiety (Gong et al., 2019).

Too much stress can cause performance anxiety, which hurts your health and does not allow you to stand still relaxed, confident, and focused in competition. Every competitive athlete experiences some stress; good and bad (Li et al., 2021). The stress may be positive and helpful or instill anxiety and apprehension. Stress may be either external with environmental source, or caused by internal perceptions of the individual. Studies in the field of executive functioning and cognitive performance have investigated the role of different factors in the variance of quantity and quality of such processes. One of the major related factors in these studies, is the role of stress on cognitive and higher cortical functions (Wood et al., 2020). Pre-competition stress can cause some athletes to not sleep well the night before competition. Some athletes can’t eat the morning before a big competition. The pre-competition stress may make them feel like they have to throw up (Brown et al., 2020). The stress model demonstrates what factors affect stress in sport. Stress can affect performance, the way an athlete responds to the stress can affect it, and the management of the stress can negatively or positively affect the athlete’s stress level (Pereira-Ferrero et al., 2019). Contemporary sports are highly supported by psychology not less than that of fitness and technics (Olmedilla et al., 2015). Apart from this, the Ethiopian National Sport Policy didn’t give an attention on the regulation of athletes or players behavior that may be reflected in the field of sport because athletes might be under the influence of several psychological factors that affect their performance positively or negatively during a competition or tournament. These factors sometimes can be related to the personality structure of an athlete or might occur because of an external stimulus as well. In Ethiopia, the sport training centers do not have any curriculum on sport psychology to support the physical training with mental training. Athletes in Tirunesh Dibaba sport training center are selected from different parts of the country with varied social, economic, cultural, and values of their respective society. They come from schools, projects, and kids training centers, with less access to a competition experience. Additionally, an independent life apart from family at the age of 15, 16, and 17 brings some feeling to athletes in camp. However, the impact of these psychological dynamics such as stress and anxiety during competition and training is less known. Also, considerations that the coaches, training centers, athletes and responsible bodies have towards a mental training as we do for physical training is less documented. Therefore, this study assesses the impact of psychological dynamics on computation performance of short distance runners in Tirunesh Dibaba sport training center.

**Materials and Methods**

**Study setting**

The researcher was selected an area of research study site is in Oromia region Arsi Zone Tiyo Woreda Tirunesh Dibaba sport training center. The reason for selecting these training centers are because of the closeness to the researcher home, regular work place and large number of athletes are present.
Research Design
A research design would refer to plan and structure of investigation used to obtain evidence to answer research questions. In this study, a quantitative research approach, cross-sectional design has been used based. The researcher employed a research method and design for the study using census sampling method of the survey study as the total number of population has been considered for the title ‘impact of psychological dynamics on computation performance of short distance runners in Tirunesh Dibaba sport training center’. The researcher is used qualitative data to acquire insight about the issue in the study area. The researcher employed descriptive survey method of the study because it provided the researcher with a deep description of present conditions about the problem under investigation. It also facilitates to sketch conclusion based on the facts obtained from respondents.

Samplesizeandpopulation
The sample of the population was only includes the sprinters of athlete Tirunesh Dibaba sport training center which located in Tiyoworeda that consider 100 m, 200 m, 100 m hurdle and 110 m hurdle, 400 m and 400 m hurdle selected by inclusive or census data sampling method. The whole sprinter trainees have been participated in the study. Accordingly, 48 participants selected in the study. This means 31 male and 17 female are included in the sample.

Datacollectingprocedure
The study would be used primary data sources that the respondent responds to the questionnaires. In order to get consistent information for the research, the researcher employs written questionnaire method to collect the reliable data from the participants or sprinters. The researcher used questionnaire for data gathering instruments because of it was easy to identify on the effects of stress and anxiety on the emotions of competitive performance of Athlete Tirunesh Dibaba sprinters. The questionnaire has been designed so as to be answered by individuals who were included in the study.

Questionnaires
A self-developed data collection questionnaire set of questions are developed for the respondent in order to gather the appropriate information about the issue under investigation. To do so, a Liker scale questionnaire was developed after intensive literature study and administered. The questionnaire are closed ended type of questions for sprinters prepared in local language and translated to English.

Pilottest
Before the actual study was carried out, a pilot study was conducted on 10 respondents who were not part of the sample group. The purpose of the pilot study was to assess the relevance of the questionnaires designed to collect data for the study. The objective was also to check the clarity of the questionnaire items. Accordingly, 20 questionnaires were distributed to 10 athletes. On the bases of the feedback of the pilot study the researcher and expert’s take some modification on the questionnaire.

Dataanalysis
Data analysis are the process of scientifically searching, arranging and organizing the questionnaires and other materials that the researcher was collected for the intended study and used the computer program such as statically package for social science (SPSS Version 20) and as the main tool of summarizing the data. Descriptive statistics types of data analysis has been used to analyze the data. Describing and interpreting the data by considering the mean and standard deviation was used. Also, multiple regression was used to see the predictors of competitive performance of short distance runners.

Ethical issue
During conducting the study, the researcher should guarantee the participants that the information
Innovations, Number 73 June 2023

attained was utilized for only the purpose of the research issue. Names of the respondents were not documented during the data gathering to ensure the confidentiality and privacy of the informant consider. Informed consent was obtained from each participant and permission to the study was granted from the director training of the center.

Results
In the Table 1, participant’s sex are represented by a frequency level of which 31 respondents were males (64.6%), and female represented by a frequency level of 17 respondents are (35.4%), so majority of participants are male. The participant’s age group are from 14-16 age categories represented by a frequency level of 5 respondents are (10.4%), from 17-19 age categories represented by a frequency level of 41 respondents which are (85.4%), and above 20 age categories represented by a frequency level of 2 respondents are (4.2%) participate on the survey study, so majority of the athletes are participated in between the age of 17-19 categories.

Table 1: Demographic Information

<table>
<thead>
<tr>
<th>Items</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex: Male</td>
<td>31</td>
<td>64.6%</td>
</tr>
<tr>
<td>Female</td>
<td>17</td>
<td>35.4%</td>
</tr>
<tr>
<td>Age: 14-16</td>
<td>5</td>
<td>10.4%</td>
</tr>
<tr>
<td>17-19</td>
<td>41</td>
<td>85.4%</td>
</tr>
<tr>
<td>&gt;20</td>
<td>2</td>
<td>4.2%</td>
</tr>
</tbody>
</table>

Athletes in the training center have a problem of drained with competition emotions. Since the mean and st. deviation ranges from (M=2.48-3.31 and SD=1.07-0.989) for all anxiety related responses. They get nervous and anxious, unable to control their worry, annoyed and irritable, entertain feeling of afraid and couldn’t stand still in a competitive situation during competition this means as a mean and standard deviation approaches to positive 1 the emotions of the athlete during competition is higher. Differently some of the athletes unable to relax in a competitive situation which indicated in the table above the (M=2.71 and SD=1.071).

Table 2: Psychological dynamics symptoms (Mean and standard deviation (SD))

<table>
<thead>
<tr>
<th>No</th>
<th>Items</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Feeling nervous, anxious, or on edge.</td>
<td>48</td>
<td>2.75</td>
<td>.934</td>
</tr>
<tr>
<td>2</td>
<td>Not being able to stop or control worrying</td>
<td>48</td>
<td>2.48</td>
<td>.989</td>
</tr>
<tr>
<td>3</td>
<td>Worrying too much about different things</td>
<td>48</td>
<td>2.85</td>
<td>.922</td>
</tr>
<tr>
<td>4</td>
<td>Troubler relaxing</td>
<td>48</td>
<td>2.71</td>
<td>1.071</td>
</tr>
<tr>
<td>5</td>
<td>Beingmore restlessthatinghard to sit still</td>
<td>48</td>
<td>2.79</td>
<td>.849</td>
</tr>
<tr>
<td>6</td>
<td>Becoming easily annoyed or irritable</td>
<td>48</td>
<td>3.31</td>
<td>.926</td>
</tr>
<tr>
<td>7</td>
<td>Feeling afraid as if something awful might happen</td>
<td>48</td>
<td>3.06</td>
<td>.836</td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>48</td>
<td>2.85</td>
<td>.932</td>
</tr>
</tbody>
</table>

Keys: As mean value > 3.5 = nearly everyday, 2.5-3.5 = several days, 2-2.5 over half a day
According to table 3 data the average Mean=1.83 and St. Deviation=0.874. The distribution of means between the 10 performance-related questionnaire is Mean=1.58-2.13 and St. Deviation=0.676-0.898 respectively.

Table 3: Psychological dynamics impact on performance (Mean and Standard Deviation)

<table>
<thead>
<tr>
<th>No</th>
<th>Performance-related items</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Have you ever missed your competition because of stress?</td>
<td>48</td>
<td>1.85</td>
<td>.875</td>
</tr>
<tr>
<td>2.</td>
<td>Have you ever missed competing because of false start?</td>
<td>48</td>
<td>1.58</td>
<td>.767</td>
</tr>
<tr>
<td>3.</td>
<td>Did the hurdle kick you as you lose physical energy?</td>
<td>48</td>
<td>2.04</td>
<td>.988</td>
</tr>
<tr>
<td>4.</td>
<td>Did you ever miss your running lane?</td>
<td>48</td>
<td>1.96</td>
<td>.771</td>
</tr>
<tr>
<td>5.</td>
<td>Have you ever started late being stressed?</td>
<td>48</td>
<td>1.73</td>
<td>.676</td>
</tr>
<tr>
<td>6.</td>
<td>Did you fall before the finish line because you are nervous?</td>
<td>48</td>
<td>1.63</td>
<td>.815</td>
</tr>
<tr>
<td>7.</td>
<td>Have you ever broken between competitions?</td>
<td>48</td>
<td>1.88</td>
<td>.815</td>
</tr>
<tr>
<td>8.</td>
<td>Does your anxiety push you forward to score good time?</td>
<td>48</td>
<td>1.83</td>
<td>.808</td>
</tr>
<tr>
<td>9.</td>
<td>Do you feel strong after the finish line?</td>
<td>48</td>
<td>2.13</td>
<td>.789</td>
</tr>
<tr>
<td>10</td>
<td>Have you ever disobeyed the referee being stressed?</td>
<td>48</td>
<td>1.69</td>
<td>.719</td>
</tr>
<tr>
<td></td>
<td><strong>Average</strong></td>
<td>48</td>
<td>1.83</td>
<td>.874</td>
</tr>
</tbody>
</table>

*Keys:* mean value 2.0-3.0 = ‘not sure’, 1.0-2.0 = ‘yes’ and 0.5-1.0 = ‘no’

The multiple regression result in Table 4 shows that emotions of competitive performance is affected by level of stress and anxiety since it 35.1% of variance ($R^2=.351$), $F=90.037$, $p < 0.05$). Hence, this result is significant at the $p=0.05$ level stress and anxiety moderately and positively impacting motions of competitive performance. Emotions of competitive performance effect size is significant ($R^2=.351$, $F =$, 90.037, Beta value (B) = 18.85, $p < 0.05$).

Table 4: Statistical summary of the result

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>Std.Error</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>1.885</td>
<td>0.658</td>
<td>0.000</td>
</tr>
<tr>
<td>Stress</td>
<td>-0.291</td>
<td>0.033</td>
<td>0.000</td>
</tr>
<tr>
<td>Anxiety</td>
<td>0.311</td>
<td>0.037</td>
<td></td>
</tr>
</tbody>
</table>

*Note:* $R^2=.351$, $F=90.037$, *p <.05,*

Independent variable: Stress and Anxiety
Dependent Variable: Psychology of competitive performance

Discussion

The main aim of this study was to assess the impact of psychological dynamics on computation performance of short distance runners in Tirunesh Dibaba sport training center. The results of our study show that short distance runner athletes in the training center have a problem of drained with competition emotions with ($M=2.48-3.31$, $SD=1.07-0.989$) for all anxiety related responses. They get nervous and anxious, unable to control their worry, annoyed and irritable, entertain feeling of afraid and couldn't stand still in a competitive situation during competition. Differently some of the athletes unable to relax in a competitive situation which indicated in the table above the ($M=2.71$ and $SD=1.07$). Supporting the findings of our study, (Venhorst et al., 2018) stated that majority of endurance athletes who are worrying too much about different things during competitions frequently showed a decreases in
Performance. However, contrasting the findings of our study, low level of cognitive anxiety and negative correlation between cognitive anxiety and sport performance was observed among Track and Field players (Parnabas et al., 2015).

A comparative study among team and individual sport athletes shows that a higher proportion of individual sport athletes reported anxiety or depression than team sport athletes (13% vs. 7%, p < 0.01) (Pluhar et al., 2019). Individual sport athletes were more likely than athletes in team sports to play their sports for goal-oriented reasons, as opposed to for fun (30% vs. 21%, p < 0.05) (Pluhar et al., 2019). Individual sport athletes are more likely to report anxiety and depression than team sport athletes. This might imply that the mental health benefits of participation in organized sports may vary between individual sport athletes and those playing team sports (Nixdorf et al., 2016; Pluhar et al., 2019). Athletes show different kind of physiological expressive actions that they are anxious, worry and irritated. Because of a lack in awareness about the nature and management of stress and anxiety they afraid of their own feeling that something bad may happen to them in competitions.

Anxiety should be considered in both ways, either debilitating or as enhancer of performance. According to (Röthlin et al., 2020) the increased stress of competitions can cause athletes to react both physically and mentally in a manner which can negatively affect their performance abilities. As stress and level of competition anxiety increases athletes lose physical energy and hard to standstill in competition (Khalid, Z., Arooj, N., & Fatima, 2020). The results of our study depicts that almost all the value of mean of each responses are between 3 and 4 which indicate that there is a strong relationship between the athletes and the levels of stress with an aggregate (M=3.51; and SD=1.123). Majority of the athlete are tense physically and with a sweaty palms. Spend less time to think about life goals rather they worry about different things that push them to have temper and low self-confidence. The result having low self-esteem and self-confidence will result into thrusting oneself and others too.

Majority of the athletes in Tirunesh Dibaba sport training center are novice. Thus, they are expected to lose their self-confidence during completion. According to (Reardon et al., 2019a) the amount of self-confidence that an individual possesses has been found to differ among elite and novice athletes. In novice athletes it’s common to frustrated and afraid of competition; hard to relax for them; annoyed and irritated with a simple and resolvable situations. It’s true that stress will not totally removed from anyone’s life. The reason could be that most of the athlete in a training center do not want to share their issues and they lack confidence to get any help about their situations. They keep and stressed with their situation/problem/; they aren’t feeling relaxed to tell to family or friends. Because of these factors they do not get a proper sleep which may intern leads them to loss of physical energy and affects their performance.

The results of our study revailed that the impact of psychological dynamics on performance is high with (M=1.83; and SD=0.87). Substantiating the results of our study, (Boullosa et al., 2020) showed that anxiety have effect on athletes’ performance before and during competition. This psychological dynamic is arised because majority of the athletes don’t remain calm before they compete, as they fell nervous before they compete.

In contrast some others knowingly or unknowingly they break through incredibly. Actually anxiety can play a role in making the athletes ready for their career. According to (Reardon et al., 2019b) anxiety is a psychological dynamics that affects the majority of athletes performance. Athletes with high level of anxiety is going to a high risk of underperformance. According to (Correia & Rosado, 2019) athletes with a high degree of trait anxiety have a higher level of state anxiety and consequently a higher risk of performing below his or her potential in the competition. These athletes are predisposed to perceive a wide range of competitive circumstances as threatening and to respond to them with states of anxiety and a disproportionate magnitude with regard to the demand (Bedir & Erhan, 2021).

The findings of our study scrutinizes that emotions of competitive performance is affected by level of stress and anxiety with 35.1% of variance ($R^2=351$), F=90.037, p < 0.05. Supporting the results of our study, evidences show that psychological dynamics such as stress and anxiety moderately and positively impact motions of competitive performance (Nixdorf et al., 2016). More evidences witnessed...
that (Davis et al., 2018) athletics performance is not a solo product of physiology (stress and fitness) and biomechanical (technique factors) but psychological factors also play a crucial role in determining performance.

Conclusion

The present study established the association between psychological dynamics and competition performance among novice short distance runners. Psychological dynamics such as anxiety and stress are symptoms of low athletic performance indicating the mental health condition of athletes. This is because, most of the athletes are frightened, afraid, nervous, disinterested to be competent, worry about what will going to happen and changes in physiological aspects like breathing, heart beat and sweat on different parts of the body. These can drive them to make a mistake in competition venue and the effect of stress and anxiety. While these identified psychological dynamics might be used for improving mental health symptoms of novice project athletes, further research is needed to better understand and support the mental health for this target group. These findings suggest the necessity to understand the impact of psychological dynamics on competition performance of short distance runners in the context of Ethiopia. Future research is required to inspect the mental health level of elite and novice athletes.

References


