

The Relationship between Training Load and Sport Injury among Amhara Den Enterprise Athletics Project

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Abstract

In any competitive sporting environment, it is crucial for athletes to have a maximum effort to win the race free from injury and illness. The purpose of this study was to investigate the association between training load and sport injury among Amhara den enterprise athletics project athletes. Amhara Den Enterprise Athletics Project was started in 2005 E.C with one coach and 20 athletes from both sexes. Nowadays, it has 35 athletes and one coach who engage in different track events. This study used 10 equal number of male and female athletes as a sample, questionnaires and interview to collect the data, and finally they were discussed the significance relationship between training load and sport injury in athletes according to the finding of the data.

Key Words: Training Load, Athletics project, Sport Injury, Amhara Den Enterprise

1. Introduction

1.1. Background of the Study

Many people in our country participate on regular basis in both organized and recreational sport and physical activity. There is a great demand for well educated, professional trained personnel to supervise and oversee the activities. Among these professionals are coaches, fitness professionals such as strength and conditioning specialists and personal trainers, recreational specialists, athletic administrators, and other interested in some aspects of exercise and sport science.

Participation in any type of physical activities places the “athlete” in situations in which injury likely occurs. Athletes who engage in organized sport or recreational activities have every right to expect that their health and safety will be of high priority for those who supervise and organize activities (Prentice, 1999).

Quantification and monitoring of training load and athletes’ response to it is imperative to maximize likelihood of optimal athletic performance at specific time and place. The response to load stimulus applied to an athlete can be either positive (increase physical capacity) or negative (injury, illness and overtraining) (Drew, et al, 2016).

The appropriately graded prescription of high training load should improve player fitness, which in turn may protect against injury (Gabbett, 2016). Frequently, athletes perceive excessive training as the principal factor in their injury, an observation that is biologically plausible yet somewhat ambiguous. If the applied training load is suddenly increased, this may increase the risk for sport injury development, irrespective of the absolute amount of training (Nielseon, et al, 2016).

Athletics has multiple training components including technical, tactical, physical and mental conditioning, which must simultaneously be developed for success. Balancing multiple physical stressors to ensure positive result from training can be achieved through periodization (Austin, et al, 2015).

A training load is the work or exercise that an athlete performs in the training session that adapt inside the cells of the body. When the athlete is challenged by a new training load, there is a response from the body in the form of either psychological or physiological adaptation. If the loading mechanism is not scientific, it has an impact on physical performance, depending on the maturity of the athletes. Different training loads have

different effects on an athlete's recovery, and an excessive training load causes incomplete adaptation; and the athlete will have problems with recovery from the training stimulus faced injury (Thompson, 1991).

1.2. Statement of the Problem

Countless sport injuries are happening in athletics. These injuries may happen due to nutrition, previous exposure to physical exercise, the motivation of athlete's, the appropriate of training field and training load are possible assumptions. Most of the above mentioned causes are actual and confirmed. However, there is no clear information regarding the association between training load and sport injury among Amhara Den enterprise Athletics Project.

1.3. Objective of the Study

1.3.1. General Objective

The general objective of the study was to examine the relationship between training load and sport injury in Amhara Den Enterprise Athletics Project

1.3.2. Specific Objectives

- To determine training load and related injuries.
- To identify the impact of duration and frequency related to sport injury in Amhara Den Enterprise Athletics Project.

1.4. Research Questions

1. What is training load and related injuries?
2. What would be the impact of duration and frequency of training related to sport injury?

1.5. Significance of the Study

This study would important for sport science professionals, coaches, athletes, fitness professionals and personal fitness trainers who supervise and organize physical activity for different purposes. Specifically, it

- gives information about training load and related sport injuries for coaches, personal trainers and others who are interested in exercise and sport science; and
- serves as a baseline for future studies and actions.

1.6. Delimitation of the Study

This study was delimited to Amhara Den Enterprise Athletics Project athletes that participate in different filed of track and field events, and the association between training load and sport injuries.

1.7. Limitation of the Study

When this study was conducted, there were challenges that limit achievement of the objective of the study. Such challenges were;

- Inability to obtain the study unit at the right place and time.
- Athletes were not fully accessible to answer the questionnaires due to training.

1.8. Operational Terms

Injury: Is damage to the body. This may be caused by accidents, falling, weapons, and other causes.

Sport injury: Are injuries that occur in athletic activities or exercising;

Periodization: The systematic planning of athletic training to reach athlete's at best performance for important competition off the year.

Absolute training: The sum total of all training sessions, or particular domain of training over a given period such as day or week.

3. Research Methodology

3.1. Study Area and Period

The study was conducted in Amhara Den Enterprise Athletics Project at Debre Markos town, which is found in North-western Ethiopia in Amhara National Regional State, East Gojjam Zone, at a distance of 300km from Addis Ababa and 265 km from Bahir Dar, the Regional Capital. Its altitude is 2420m above sea level and the astronomical location of Debre Markos is 10°21 minute North latitude, 37°43 minute East longitude.

The average annual rainfall of the town is 1308mm and maximum and minimum recorded temperature being 24c° and 4c°, respectively. The study was conducted from March, 2016 to June, 2016.

3.2. Study Design

The study used retrospective longitudinal study design to assess training load and injuries that occur in the past to present time of training work in Amhara Den Enterprise Athletics Project athletes.

3.3. Study Population

The population of this study was athletes in Amhara Den Enterprise Athletics Project. They are thirty five in number, and from the total of twenty are males and fifteen are females'. The athletes participate in different field track events.

3.4. Sampling Size and Technique

The study used ten male and ten female athletes from the total of thirty five athletes by using non probability sampling technique using convenience sampling. The purpose of using convenience sampling method was for the sake of taking study unit that exist at the time of data collection.

3.5. Data Collection Tools

In order to achieve the goal of the study, both questionnaire (open and closed end) and interview were used.

3.5.1. Questionnaire

In order to get the association between training load and sport injury questionnaires were distributed for both male and female athletes of Amhara Den Enterprise Athletics Project.

3.5.2. Interview

In order to get additional data about the study, beside the questionnaires, interview was prepared for the coach.

3.6. Data Analysis

The collected data had been arranged and tabulated. A simple descriptive analysis was used to ease the interpretation of data.

4. Data Interpretation and Discussion

This chapter deals with the analysis and interpretation of the data obtained from Amhara Den Enterprise Athletics Project athletes who participated in different field track events.

4.1. Result from Athletes Responses

Table 1: Age of the Respondents

Item	Alternative	No respondents	Percentage
Age of respondents	10-16	10	50
Total	16-20	8	40
	20-25	2	10
	25-30	-	
		20	100

According to table 2 above, the age of respondents between the ages of 10-16 were 50%, 16-20 (40%) and 20-25 (10%) of both male and female athletes of respondent. Hence most athletes (50%) indicate they are at puberty and adolescence, the remaining were adulthood stages of growth development (Thompson, 1991).

Table 2: Training Age of the Respondent

Item	Alternative	No-of respondent	Percentage
Training age	1-3	13	65
	3-4	5	25
	5 and above	2	10
Total		20	100

From the table 2 above, we understood that, 13 (65%) of the athletes were trained for one up to three years in the Project; 5 (25%) of the athletes were trained for three up to four years and 2 (10%) of the respondent athletes received training for five and above years in Amhara Den Enterprise Athletics Project.

Part- two closed end questionnaire related to the problem

Table 3: Training Days per Week

Option	No-of respondent	Percentage
3 days	-	-
4 days	-	-
5 days	7	35
6 days	13	65
All days of week	-	-
Total	20	100

As observed from the above table (3) 13(65%) of the respondents were doing training six days per week and 7(35%) of the respondent athletes were doing five days per week. Simply here the recovery time of the athletes was different.

Table 4: Twice per Day

Option	No-of respondent	Percentage
Yes	23	65
No	7	35
Total	20	100

From the above table (4) we understood that 13(65%) of the athlete were doing training twice per day, whereas 7(35%) of the athletes was trained once per day. Here athletes were exposed to physical exercise, since they are Project athletes.

Table 5: Training Load per Day

Option	No-of respondent	Percentage
High	3	15
Medium	17	85
Low	-	-
Total	20	100

As we saw from the above table (5) 17(85%) of the athlete was perceived the progression of training load in moderate ways. While 3 (15%) of the athlete was perceived in high amount. Simply this indicates there was training load imbalance among the athletes.

Table 6: Injury and Training Load

Option	No-of respondent	Percentage
Yes	5	25
No	15	75
Total	20	100

The above table (6) shows that 15 (75%) of the respondent athletes was not injured in the given training load of the program, but 5 (25%) of the athletes were injured in the given training load. Here the training load for some athletes was not comfortable and, so the athletes became vulnerable for training load injuries that impede athletic performance.

Table 7: Duration and Repetition of session Training affect on Performance

Option	No-of respondents	Percentage
Yes	4	20
No	16	80
Total	20	100

The above table (7) indicates, that 16 (80%) o the athletes had not any impact on their performance in session training and 4 (20%) of the athletes was affected by session training.

Table 8: Injured During Training

Option	No-of respondents	Percentage
Yes	12	60
No	8	40
Total	20	100

The above table (8) shows that 12 (60%) of the athletes have injured during training, whereas 8 (40%) of the athletes was not injured at the time of training.

Part-three: Open end questionnaires related to the problem

Question (3): If your answer is ‘yes’ for question number two, justify your feeling about the training?

Based on the above question the respondent athletes justified their answer as follows;

- *It improves our performance*
- *Used to decrease body weight as they train afternoon*
- *To increase cardio vascular system*
- *To adopt training load.*

Question (6): If your answer is ‘yes ‘ for question number five list the type or name of the injury? Athletes mentioned their answers as follows

- *Knee injury*
- *Hamstring*
- *Decrease in performance*
- *Ankle injury*

Question (8): If your answer is ‘yes’ for question number seven, explain the affect on your performance?

Some athletes suggested that there was a negative effect on his or her performance such as fatigue, illness, and tiredness. Whereas most athletes justified as follow; they said get positive effect on performance such as:

- *Optimizing in performance*
- *Improving physical fitness*
- *Maintain strength*
- *Maintain performance*

Question (10): If your answer is ‘yes’ for question (9), what did you feel in training days before injury happened? Responses of the interviewees included:

- *Tiredness during training*
- *Fatigue*
- *Headache*
- *Decrease in performance*

4.2. Interview Analysis

The main purpose of this interview was to assess the association between training load and sport injury among Amhara Den Enterprise Athletics Project athletes. Based on I raised questions concerning to training load and injury for coaches about his athletes.

As the coach suggested injury occurs to athletes when new training is introduced. And many of athlete's injury occurred at the time of pre-competition and competition phase of training due to;

- *Over stress and anxiety of athletes for competition*
- *Intensity of training load.*
- *Made training by his or her self with out the seeing of the coach.*

5. Summary, Conclusion and Recommendation

5.1. Summary

Based on the analyzed and interpreted data of the athlete's questionnaires and coach interview, the study was summarized as follows:

- *There was a significant relationship between training load and sport injuries;*
- *Athletes who trained twice per day faced frequent injuries;*
- *Imbalance between training age and training load leads athletes to common sport injuries;*
- *An inappropriate training load for individual athletes leads to an injury and decreased physical performance.*

5.2. Conclusion

Based on the analyzed and interpreted data the researcher made the following conclusions.

- *A lesser recovery time would result in an injury to the athletes;*
- *Immature athletes in training are vulnerable for frequent sport injuries.*
- *Training age has inverse relationship with injury; and*
- *The increment of intensity, duration and frequency without considering individual differences faced to injury.*

5.3. Recommendation

Based on the findings of this study it is possible to understand the variety of training load effects on the success of athletes. So the researcher puts forward for future research to investigate the monitoring of training load in athletics. These include *implementation of planned and periodized training programs*

- monitored accurately can prevent injuries among athletes;*
- *taking the opinion of athletes into account for preparation of the program is crucial to reduce incidence of training load injuries;*
 - *Vigorous training activity requires proper warming up and stretching before exercise and cooling down after exercise to reduce sport injury.*
 - *Recovery time is mandatory for anybody to build and replace the lost cells in new one.*
 - *Sport science and medicine professionals working with athletes should monitor the training loads and avoid acute spikes in loads.*

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