THE PSYCHOLOGICAL IMPACT OF SPORTS INJURIES AMONG GHANAIAN UNIVERSITY ATHLETES

ABSTRACT

Background: Sports injuries have been reported to affect athletes psychologically. Sports injury and the psychological health of athlete are parallel in nature thus affects the rehabilitation phase of an injury.

Aim: The aim of the study is to determine the psychological impact of sports injuries among Ghanaian University Athletes.

Methodology: A convenient sampling method was used. The Bi-Polar Profile mood of states questionnaire used to quantify the mood states of injured athletes and the numerical rating scale was used to determine severity of the injuries. Inferential statistics of independent student *t* test, ANOVA and Spearman's correlation were implored in the data analysis.

Results: There was a statistical significance difference in the mood of injured athletes ($p<0.05$). The mean of non- injured athletes (25.67±5.66) was significantly higher than the injured athletes (22.20±6.73) on the anxiety-composed scale. There was no statistically significant difference between mood and injured male and females ($p< 0.05$).

Conclusion: The mood of injured athletes were more negatively affected than non-injured athletes. However, the sex and the types of sports engaged in by the athletes had no significant influence on their mood presentation. Rehabilitation professionals including physiotherapists should consider highly the mood of

athletes in their management goals irrespective of the sex and sports participation years with a view to make appropriate medical referral.

Keywords: Sports injury, Psychology, Collegiate athletes, Rehabilitation

Abbreviations

SIRP's – Sports Injury Rehabilitation Professionals

NCAA – National Collegiate Athletic Association

Bi-POMS- Bipolar Profile of Mood State Questionnaire

INTRODUCTION

Olmedilla *et al*[1] defined sports injuries to be any bodily damage sustained during participation in sports. Whereas Sachs *et al*[2] referred to sports injuries as sports related injuries which cause players' inability to participate one day after injury and requiring medical attention. Sports related injuries have adverse effects on individuals to the extent that it sometimes jeopardizes one's career and it can have a negative toll on the psychological and emotional health.[3]

Sports Injuries have a wide spectrum which spans from minor injuries like bruises and grazes through moderate associated injuries like sprains and strains to more detrimental injuries such as fractures and even death in some rare cases.[3] One's participation in sports may be due to several reasons. Hill *et al* [4] further identified psychological adjustments, externalizing behaviors, low levels of depression and positive relationship with peers as some of the beneficial effects individuals can derive in sports participation. In contrast to the above, the major detrimental effects in sports participation are sports related injuries which are mostly associated with

socio-economic burden relating to the duration of the injury, nature of treatment, and loss of work/sporting time, disability and reduced quality of life[3] which may affect psychological status of the athletes irrespective of their level. Sports participation are extra-curricular activities in higher institutions through which selected athletes represent their schools in different competitions [32,33]. Collegiate athletes are a group of individuals who partake in an organized competitive sport that is financed and sponsored by the institution which he/she finds himself/herself in.[5] Injury occurrence among these groups has been reported to be a potential stressor that have negative effects on their psychological and emotional health.[6] Sports related injuries can go a long way to render the athlete disabled which can have a huge psychological toll on the individual.[7]

Putukian[6] further established the fact that injury as a major stressor on sports related activities has both psychological and emotional effects in collegiate athletes. The author highlighted depression, substance use, participating anxiety, suicide, eating disorders and binge drinking as some of the negative effects of injuries on the psychological aspect of the athletes' health. For instance, depression as a psychological and emotional response to injury can hinder injury recovery rate.[6] Previous study revealed that 21% of participants reported high alcohol usage and problems associated with alcohol among 262 collegiate athletes. Also, it was established that there was an association between self-reported symptoms of depression and alcohol abuse. Athletes with severe depression and psychological symptoms had a greater rate of alcohol abuse compared with those with low depression and psychological symptoms.[8] Several researchers have reported that

the adherence rate to treatment protocols and recovery during the rehabilitative phase is influenced by the psychological challenges that most injured athletes face.[9,10,11]

Upon recognition of the relevance of providing psychological needs to individual injured athletes, The National Athletic Trainer's Association[12] published a document which meant to inform athletic trainers on how to help injured athletes psychologically. Stressing on these outlined strategic competences, athletic trainers should be able to identify clients exhibiting abnormal social, emotional and mental behaviors so as to implement psychosocial strategies, intervene -and refer to the appropriate professionals when necessary. The call for the use of psychosocial strategies has been well documented in literature with goal setting, positive self-statements, cognitive restructuring, relaxation strategies and mental imagery have been some of the useful strategies employed in aiding athletes cope with their psychological challenges.[13] Sports Professionals especially sports psychologists do not only provide strategies to help athletes when they are injured but also whilst they are in a good state to participate effectively in sports. These athletes are prepared psychologically and emotionally to be able to perform very well and produce better outcomes in their respective sporting disciplines.[11,14]

There have been shortfalls in the type and amount of psychological intervention that Sports Injury Rehabilitation Professionals (SIRPs) deliver directly.

Based on an anecdotal observation in Ghana, physiotherapists most often than not, deal only with the physical impairments of injury or disorders without considering any associated psychological problems that are capable of determining motivation

for rehabilitation. They are commonly involved in the management of sports injuries at all levels and with every sporting event. They employ various physical modalities such as ice, supportive devices, taping, graded exercises, education among others in a bid to remediate athlete's sports related injuries.[17]

Although physiotherapy has been proven to be effective in alleviating symptoms that can arise from these injuries, the rate of re-occurrence is high due to the usual neglect on the other factors that might influence the treatment outcome such as motivation and emotional reaction to injury.

Many mood disorders such as anxiety, depression, personality disorders and eating disorders might arise from the injury sustained by athletes with profound implication for rehabilitation process and eventual outcome. To ensure adequate sports injury management and rehabilitation adherence, physiotherapists should be able to recognize the patterns of the mood disorders among the collegiate athletes so as to make appropriate referrals to clinical psychologists when such need arises.

Relatively, there exists a large body of evidence based research which proposes the incorporation of sport psychology during the rehabilitative phase of injury. In spite of the widely published reports on this subject, research efforts with regard to psychological consideration and referral are still scanty among SIRPs including physiotherapists. Research in Ghana about the usage of psychosocial strategies in dealing with psychological challenges by Sports Injury Rehabilitation Professionals especially physiotherapists is scanty.

The rates of referral from SIRPs are relatively low. Clement D, et al[15] in their study found only 17% of SIRP's they surveyed, had ever referred an athlete who is injured

to a sport psychologist. This is as result of perceived lack of access or lack of need for referral; both factors could be influenced by exposure to psychology for sport injury education. Additionally, Heaney C, *et al*[16] also highlighted the need for SIRPs to receive education on the benefits of referral and to further collaborate with sports psychologists.

Literature has proven that the usage of sport psychology has proven to produce positive outcomes such as improved attitudes, adherence and self-efficacy (Brewer, 2010). Understanding the psychological impact of injuries among Ghanaian Athletes will inform physiotherapist about the need to refer the injured athletes to the appropriate professionals in order to ensure more rewarding treatment outcome. Also this study will serve as reference for further studies in the future.

Therefore, the purpose of this study is to determine the psychological impact that could be precipitated by sports injuries among Ghanaian university athletes so as to properly sensitize SIRPs including the physiotherapists to be responsive to the psychological sequel of the sports injuries so as to make necessary referral.

Objectives

1. To determine the effects of sports injuries on the mood of injured athletes.
2. To determine the difference in the moods of the injured male and female athletes following sports injuries.
3. To determine the difference in the mood of the athletes on the basis of sports participation.
4. To determine the association between severity of injury and the mood of injured

athletes.

MATERIAL AND METHODS

The study was conducted at the University of Cape Coast Campus during the Ghana University Students Association games. Athletes of the various public universities who participated in football, basketball, long tennis, sprinting, table tennis, badminton & netball and were willing to be part of the study were involved. Cross sectional study design was adopted. Taro Yamene's formulae was used to calculate the sample size n= N/1+Ne^2, where N= study population e= error of precision n= sample population N=1840e= 0.05. Based on the above formula, 320 participants were recruited. For this study, University athletes who have sustained sports injuries in connection with the tournament, Non-injured University Athletes who will participate in the tournament, and University athletes who participated in football, basketball, netball, sprinting, badminton, long tennis, table tennis were included in the study while University Athletes who have sustained injuries other than sports injuries, Athletes who have psychological problems from sources other than sports injuries. E.g. Family issues, relationship issues, etc. were excluded from the study. Bipolar Profile of Mood states (POMS-Bi) Questionnaires is the instrument that was used. It is a generic instrument, and therefore it can also be used to quantify the mood patterns of individuals including high school athletes, college athletes and psychiatric patients. Coaches of the participating Universities were contacted to inform them of the research. The researcher met them in person during the

competition to establish meeting times in order to distribute copies of the questionnaire. The researcher and two researcher Assistants visited the athletes at their various hostels to administer questionnaires to the student athletes. The questionnaire was explained to the athletes before it was administered. Data were collected after completion of the questionnaires which lasted for 10 minutes. The collected data was entered into statistical package for social sciences (SPSS) version 23.0. Mean and standard deviation were used to summarize the data. Inferential statistics of independent Sample t test was used to determine the differences in the moods of the injured male and female athletes. Association between the severity and type of injury were analyzed using Spearman Correlation. The statistical significance was set at 0.05. In all, permission was sought from Ghana University Sports Association. Written and Informed Consent was sought from the subjects after the purpose and protocol of the study were explained to them. The participants were made aware of the option to withdraw from the study at any time without fear even though the cooperation to complete the study was sought.

RESULTS

Response Rate

Two hundred and thirty (230) injured and non-injured athletes took part in this study out of which 94 (40.9%) were injured and 136 (59.1%) were non-injured.

Demographics

The age range of the athletes was 17 to 33 years (mean age = 21.8±2.3 years) of which 149 (64.8%) were males. The mean years of sport participation by the participants was 7.0±5.2 years. The results are presented in Table 1. Also, majority of the participants 110 (48.0%) engaged in soccer compared to 16 (6.9%) who partook in racket games as shown in (Figure 1). Additionally, 66 (70.2%), injured participants described their pain as sharp whiles, 20 (10.6%) described theirs as burning and dull aching as shown in the bar graph in (Figure 2).

Table 1: Demographic characteristics of participants

	Mean	**Std. Dev.**
Age	21.8	2.3
Years of sport participation (yrs.)	7.0	5.2
	Frequency	**Percentage (%)**
SEX		
Male	149	64.8
Female	81	35.2
Total	230	100.0
ATHLETE		
Injured	94	40.9
Non-injured	136	59.1
Total	230	100.0

DURATION OF INJURY		
Acute	57	60.6
Sub- acute	21	22.3
Chronic	16	17.1
Total	94	100.0

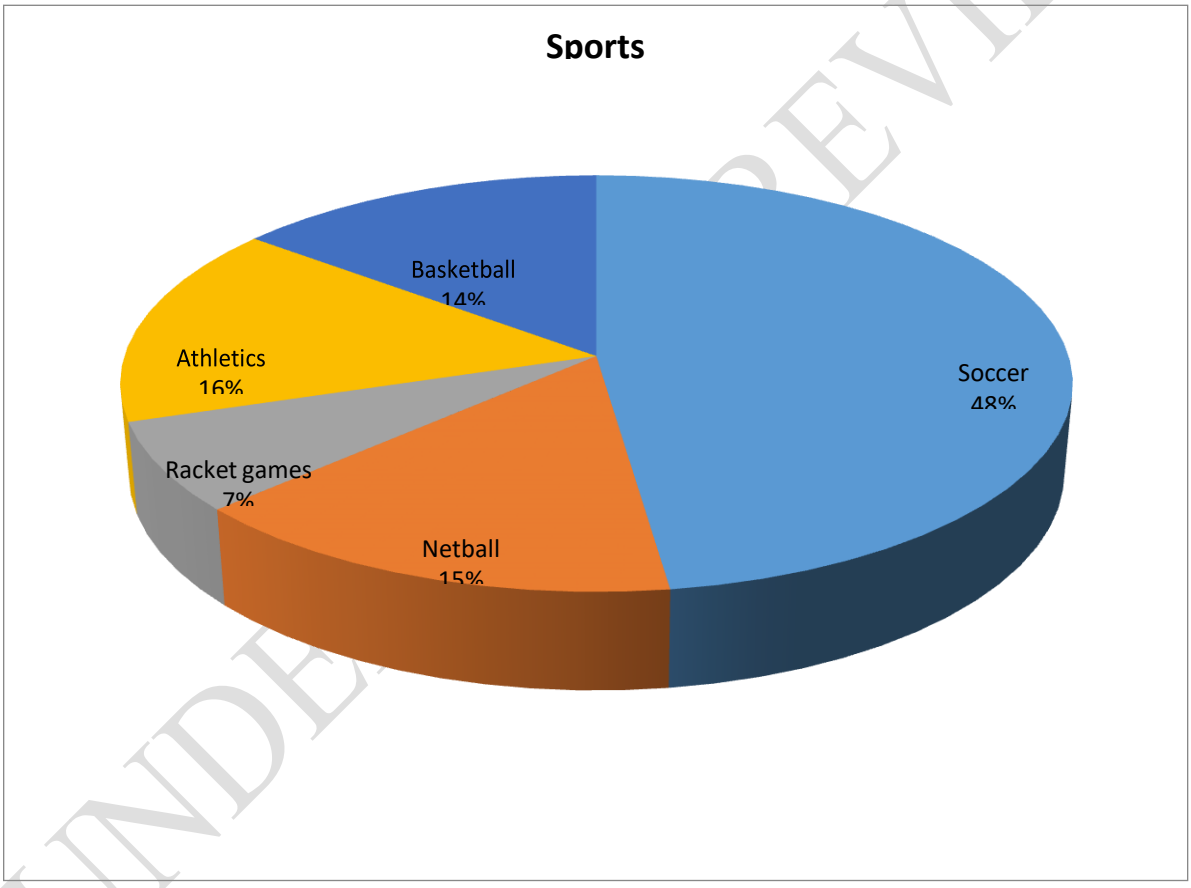

Figure 1: Type of Sports participants engaged in.

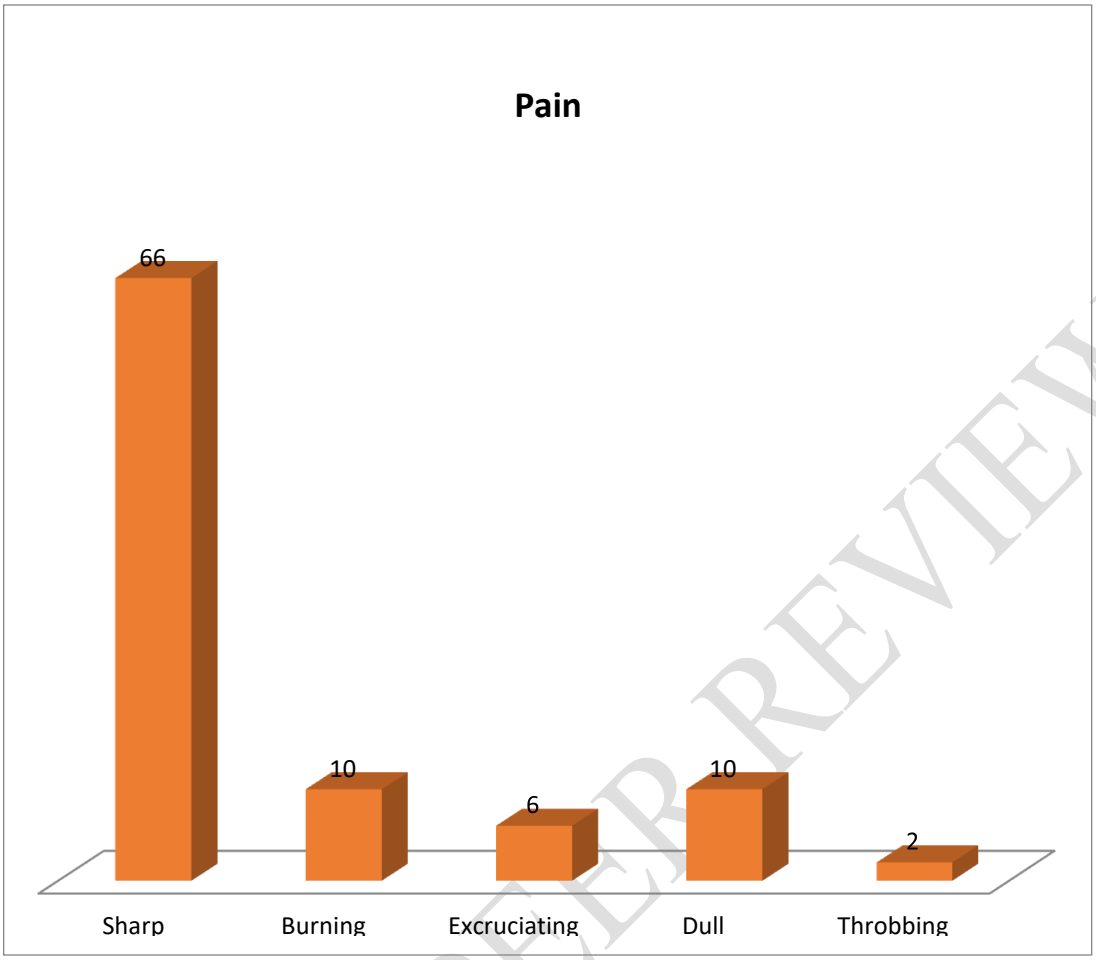

Figure 2: Participants' description of pain

Table 2: Unpaired t-test analysis for the comparison of mood of injured and non-injured athletes

POM-BI SUBSCALE	Mean± Std. Dev.	t	Sig.
Composed-Anxiety			
Injured	22.20±6.73	-4.211	**0.00***
Non-injured	25.67±5.66		
Agreeable-Hostile scale			
Injured	18.40±5.61	-4.68	**0.00***
Non-injured	21.77±5.19		
Elated-Depressed scale			
Injured	21.07±6.26	-3.39	**0.00***
Non-injured	24.04±6.74		
Confident-Unsure scale			
Injured	22.36±6.73	-4.83	**0.00***
Non-injured	26.68±6.63		
Energetic-Tired scale			
Injured	19.60±6.31	-4.34	**0.00***
Non-injured	23.35±6.50		
Clearheaded-Confused			
Injured	23.47±5.63	-4.06	**0.00***
Non-injured	26.65±5.99		

*significant at $p<0.05$, *injured athletes n=94, non-injured n=136*

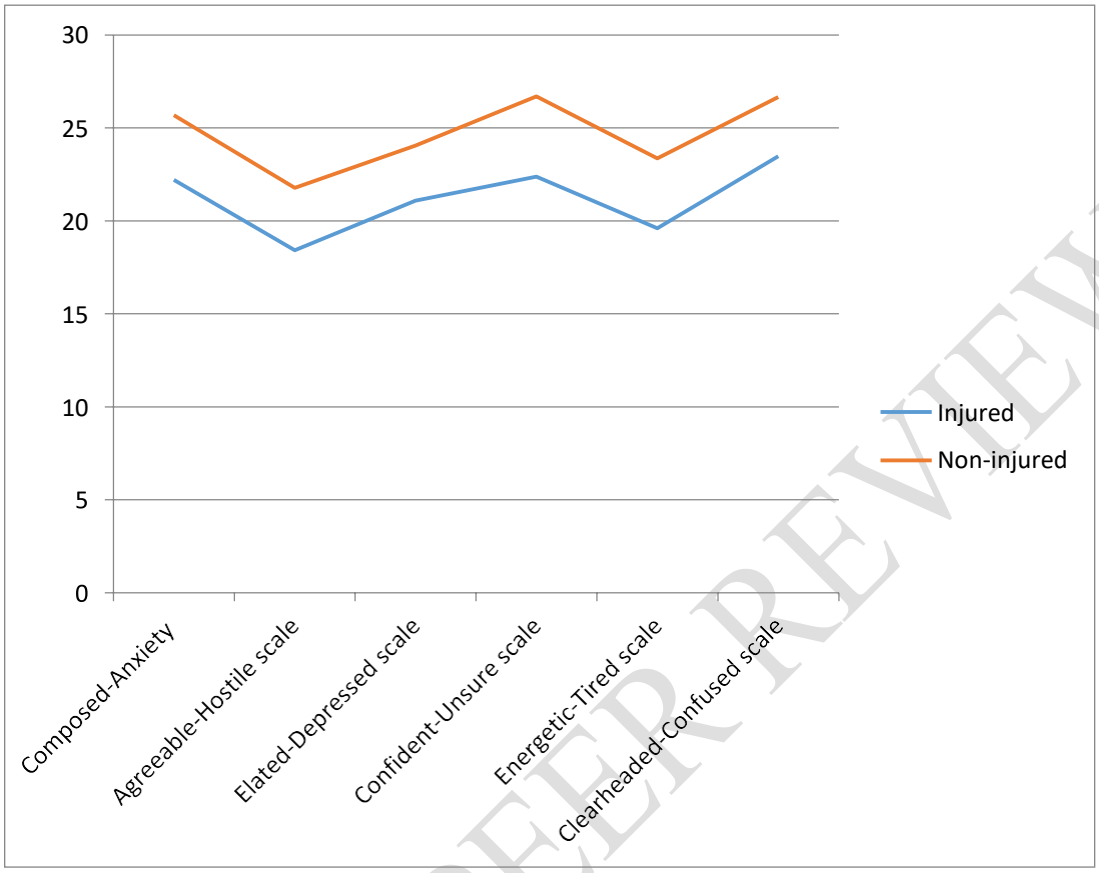

Figure 3: The comparison

UNPAIRED T-TEST ANALYSIS FOR THE COMPARISON OF THE MOODS OF INJURED MALE AND FEMALE ATHLETES

The mood of injured male and female athletes were compared. The unpaired *t*-test showed nosignificant difference ($p>0.05$) between male and female athletes except on the clearheaded- confused subscale where the mood of the males (24.60 ± 5.15,) was significantly higher than ($p=0.01$) the females mood (21.64 ± 5.96) as presented in Table 3.

COMPARISON OF THE MOODS OF ATHLETES ON THE BASIS OF SPORTPARTICIPATION

The difference in the mood of athletes on the basis of sport participation as measured with POM-BI scale, was performed using One-way analysis of variance. There was no ($p>0.05$) statistically significant difference in the mood (all POMS-BI subscale) of the athletes with regards to their sport participations. The results are presented in Table 4.

THE RELATIONSHIP BETWEEN PAIN INTENSITY AND THE MOOD OF INJURED ATHLETES

The pain intensity and mood of the injured athletes were performed using spearman's correlationcoefficient. There was no significant relationship ($p>0.05$) between the pain intensity and the mood as measured by the POMS-BI scale as presented in Table 5.

Table 3: Unpaired sample t-test showing the differences in mood of injured male and femaleathletes.

Mood	Mean±std. Dev.	t	Sig.
Composed-Anxiety			
Male	23.03± 5.86	1.533	0.13
Female	20.86 ±7.84		
Agreeable-Hostile			
Male	18.29 ±5.55	-0.242	0.81
Female	18.58 ±5.79		
Elated-Depressed			
Male	21.68 ±6.47	1.211	0.23
Female	20.08 ±5.88		
Confident-Unsure			
Male	23.36 ±6.84	1.854	0.07
Female	20.75 ± 6.30		
Energetic-Tired			
Male	20.00±6.48	0.781	0.44
Female	18.94±6.06		
Clearheaded-confused			
Male	24.60 ± 5.15	2.550	**0.01***
Female	21.64 ±5.96		

*significant at $p<0.05$, injured male athletes n=58, injured female athletes n=36

Table 4: One-way analysis of variance of mood and type of sport

Mood and sports	N	F	p-value
Composed-Anxiety*sport	228	2.306	0.06
Agreeable-Hostile*sport	230	0.121	0.98
Elated-Depressed*sport	230	0.612	0.66
Confident-Unsure*sport	230	0.882	0.48
Energetic-Tired*sport	229	0.881	0.48
Clearheaded-confused*sport	230	1.342	0.26

Table 5: Spearman's correlation analysis mood and pain intensity

Variables	N	R	p
Composed-anxiety*pain	94	0.10	0.33
Agreeable-Hostile*pain	94	0.02	0.89
Elated-Depressed*pain	94	0.17	0.11
Confident-Unsure*pain	94	0.06	0.58
Energetic-Tired *pain	94	0.08	0.45
Clearheaded-confused *pain	94	0.07	0.49

r=Spearman's correlation

EFFECTS OF SPORTS INJURY ON THE MOOD OF INJURED AND NON-INJURED ATHLETES

H_0: There would be no significant effects of sports injuries on the mood of injured and non-injured athletes.

Test statistic:

Unpaired t-test**Set p-value**: $p<0.05$

Calculated p-value:

$p^{\wedge}=0.00$

Interpretation: Since $p^{\wedge}< p$, the study rejects the null hypothesis

COMPARISON OF THE MOODS OF INJURED MALE AND FEMALE ATHLETES

H_0: There will be no significant difference on the moods of injured male and female athletes

Test statistic: Unpaired Sample t-test

Set p-value: $p<0.05$

Calculated p-value: $p^{\wedge}=0.01$

Interpretation: Since $p^{\wedge}<p$, the study rejected the null hypothesis

COMPARISON OF THE MOODS OF ATHLETES ON THE BASIS OF SPORT PARTICIPATION

H_0: There would be no significant difference of mood on the basis of sport participation

Test statistic: ANOVA

Set p-value: p<0.05

Calculated p-value: p^=0.98

Interpretation: Since p^> p, the study failed to reject the null hypothesis

RELATIONSHIP BETWEEN PAIN INTENSITY AND THE MOOD OF INJURED ATHLETES

H_0: There would be no significant relationship between pain intensity and mood of injuredathletes.

Test statistic: Spearman's correlation

Set p-value: p<0.05

Calculated p-value: p^=0.49

Interpretation: Since p^> p, the study failed to reject the null hypothesis

DISCUSSION

As individuals, we go through a lot of emotional changes depending on the kind of mood we find ourselves in. Mood can be negative or positive and it varies among individuals as a result of temperament and personality traits. There are several factors that account for altered mood changes in humans. Some of these are lack of sleep, nutrition, and lack in the sense of accomplishment among others. Moreover,

narrowing it down to collegiate athletes, since they are the main focus of this study, they go through a lot of mood imbalances. This is because apart from them pursuing excellence in their various sporting disciplines they found themselves in, there are other aspects of their life that they are expected to excel in. Pressure from their lecturers, coaches, school administrators, peers, parents to excel alone can affect the psychological mood of these athletes because failure to achieve these targets or goals can make them depressed and to a large extent committing suicide if it becomes too much a burden for them to carry.[18] Not only do they go through psychological problems, but also make them prone to having injuries as they partake in their various sporting disciplines and this further affect their psychological health as they go through a lot of emotional disorders. Even though physiotherapy is the first point of call in the event of any injury sustained by these athletes, the concerns about their inherent emotional reaction to the injury is rarely considered. Clinical psychologists are part of the Sports Injury Rehabilitation Professionals whose mandate is to alleviate psychological problems among the athletes, their service is rarely utilized among the collegiate athletes owing to lack of referrals. This same concern necessitated the present study to determine the psychological impact of sport injuries among Ghanaian University athletes.

DEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

Two hundred and thirty Ghanaian University athletes partook in the study. One hundred and forty-nine (64.8%) were males and 81(35.2%) were females. This finding was sequel to the typesof sporting disciplines during the event which were

largely male centered. The events that were male centered and dominated are soccer, basketball and long tennis. On the contrary, a study by Ristolainen *et al*[19] had more females participating in their study more than males because of the sporting disciplines participated.

A total of ninety-four athletes were injured. Out of which 58 were males and 36 females. The higher number of injured male participants is not unconnected with more involvement of the male students in event. Naturally the energy and force with which the male sex exerts in their various sporting disciplines makes them more susceptible to injuries as compared to females. Sallis JF, *et al*[20] in their study had male sex having an increased injury rate than the female sex. This finding was substantiated by Yang J, et al[21] on the epidemiology of overuse and acute injuries among competitive collegiate athletes. The authors indicated that the male sex was more prone to injuries during competition than the female sex. Contrary to the above results, Elias[22] indicated that female soccer players had a higher incidence of injury than the male sex because of the differences with respect to the physiological, anatomical or biomechanical characteristics that are more common to female.

In this study, majority of the participants 110 (48.0%) engaged in soccer and the least in racket games was 16 (6.9%). This finding is consistent with reality in Ghana where soccer attracts moreinterest than any other sporting events.

Injured athletes had most of their injuries in the acute stage (60.6%). Acute injuries are caused bya single traumatic event.[3] It occurs suddenly and mostly associated withhigh-speed sporting disciplines such as soccer and other full body contact

sports. The reason for the high incidence of acute injuries was due to stress athletes go through to attain success andalso the intensity of training regimen coaches subject them through.

Majority of injured athletes who participated in the study described their pain to be sharp followed by burning, dull, excruciating with the least being throbbing. This is not surprising as these presentations characterize the features of most acute injuries.

MOOD OF INJURED ATHLETES AND NON-INJURED ATHLETES

This present study shows that injured athlete as compared to non-injured athlete experienced more negative mood state as compared to non-injured athlete. The result obtained in this study could imply that student athletes at the collegiate level might be going through a lot of psychological problems that places much stress on them. Academic demands, competition among team mates to mention a few might make them go through psychological problems whichin most cases may affect their abilities to cope.[18] Moreover, collegiate athlete having an injury in addition to psychological problems, he/she might be going through may bring about the injured athlete having negative mood disorders.[6]

Johnston and Caroll [23] also investigated the mood changes on ninety–three injured participants and concluded that injured athletes had their moods negatively affected. This was in conformity to the current study. Similar to a study conducted by Damien C, *et al*[24] on the psychosocial aspects of athletic injuries as perceived by athletic trainers, concluded that injured athletes' experiences psychological

responses due to theirinjuries. Tripp DA, *et al*[25] corroborated all the above findings including the present study.

COMPARISON OF THE MOODS OF INJURED MALE AND FEMALE ATHLETES

This study showed injured male and female athletes did not show any significant difference onall the subscales of Bi-POMS with the exception for clearheaded-confused subscale where males had a higher score than females. Similarly, Galambos SA, *et al*[26] found that among injured male and female athletes in Australia, there was no significant difference. It thus implies that, the sex of the students does not largely have significant influence on the injuries andits clinical presentation. Indeed, female individuals are known to be emotionally weaker than their male counterpart that might have accounted for the difference in the clearheaded-confused subscale of Bi-POMS.

Understanding the differences with regards to both sexes is important in order to be able to tailor appropriately and adopt a more optimistic approach during their recovery and rehabilitation process. A study conducted among competitive male and female athletes by Appaneal RN, *et al*[27] showed that injured female athletes experienced greater depression mood states than injured collegiate male athletes. He highlighted that females tend to express more verbal emotionsthan the males. Another study by Cartoni AC, et al[28] also reported that male and female athletes having varying mood changes in their injured state which is contrary to the findings of this current study. They further established that injured male athletes experienced a lower anxiety level than females.

COMPARISON OF THE MOODS OF ATHLETES ON THE BASIS OF SPORT PARTICIPATION

The findings from this study indicated that there was no statistical significance difference on the mood of injured and non-injured athletes on the basis of sport participation. This implies that athletes have similar reaction to injury occurrence regardless of the sports the individual athletes is involved in. The mechanism of injury is how the injury occurs and according to literature, twomechanisms exist with which it happens i.e. overuse and acute injuries.[3] A study by Smoljanovic T, *et al*[29] opined that Overuse injuries presents with adverse effects some of which are loss of playing time, reduced function, psychological exhaustion and pain. This later affect the mood state of athletes since it develops at a slower rate and are associated with repetitive micro-trauma to the musculoskeletal system.[30] Repeated running activities and more rigorous training regimen is associated with overuse injuries and literature suggest that different sports have diversifiedmechanisms of injury as a result of movement demands and unique playing styles. Acute injuries usually occur without any signs of warning. It is associated with single, macro- traumatic event. They usually occur as a result of an application of an external force which results in tissue disruption. Ligament sprains and fractures can be cited as examples of acute injuries.[3]

THE RELATIONSHIP BETWEEN PAIN INTENSITY AND THE MOOD OF INJURED ATHLETES

The findings from this study indicated that there was no significant relationship between pain intensity and the mood. This means that increase in pain intensity does not have any impact on the mood of the injured athletes. It also implies that pain may not be the only factor that could change the mood state of injured athletes.

This is contrary to a study by Klenk[31] which established a link between pain intensity and the mood of injured athletes. It was further reportedthat the least seriously injured athletes showed less changes with regards to their mood and vice versa.

CONCLUSION

The mood of injured and non-injured athletes showed that injured athletes were more negativelyaffected than non-injured athletes. However, the sex and the type of sports engaged in by the athletes have no significant influence on their mood presentation. It thus implies that rehabilitation team including the physiotherapists should consider the mood of the athletes a significant factor in their management goal irrespective of the sex of the athletes and their sports participation with a view to make appropriate referral.

Consent

As per international standards or university standards, Participants' written consent has been collected and preserved by the author(s).

Ethical Approval:

As per international standards or university standards written ethical approval has been collected and preserved by the author(s).

Disclaimer (Artificial intelligence)

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