Athletes' Knowledge about Preventing Sports Injuries like: Achilles Tendinitis (AT), Runner's Knee (RK)/Patellofemoral Pain Syndrome (PFPS) and Shin Splints (SS), as Prime Prevention Strategies in Slowing Ageing Process.

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Abstract

This study was conducted to investigate the prime prevention strategies in slowing ageing process amongst Njala University, Njala Campus Athletes in Njala, Southern Sierra Leone. The significance of the study is to investigate the athlete's knowledge in preventing sports injuries like: Achilles Tendonitis (AT), Runner's Knee (RK)/Patellofemoral Pain Syndrome (PFPS) and Shin Splints (SS), as prime prevention strategies in slowing ageing process. A total of one hundred and fifty athletes (n=150) mainly undergraduates [(95 male representing 63% and 55 female representing 37%; 70 Christians representing 47% {40 male Christians representing 27% & 30 female Christians representing 20%} and 80 Muslims representing 53% {55 male Muslims representing 36.6% & 25 female Muslims representing 16.6%}; 10 married representing 7% {6 male married representing 4% & 4 female married representing 3%} and 140 single representing 93% {89 male single representing 59% & 51 female single representing 34%}; 100 from South-East representing 67% {65 male representing 43.3% & 35 female representing 23.3%} and 50 from North-West representing 33% {30 male representing 20% & 20 female representing 13%})] were randomly selected without replacement from four Schools [(65 from School of Agriculture & Environmental Science representing 43% {40 male representing 26.6% & 25 female representing 16.6%}, 85 from School of Education & Technology representing 57% {55 male representing 37% & 30 female representing 20%})] at four levels [(125 from level 100-200 representing 83% {80 male representing 53% & 45 female representing 30%}, 25 from level 300-400 representing 17% {15 male representing 10% & 10 female representing 7%})], 90 within the age range of (18-25) representing 60% {60 male representing 40% & 30 female representing 20%} and 60 within the age range from (26-30+) representing 40% {35 male representing 23% & 25 female representing 17%}in years. The Dependent t-test (t) was used to compare the results of the findings. The results were tested @ **p < 0.05** level of significance. Analysis of results from athletes' knowledge in preventing sports injuries like: Achilles Tendinitis (AT), Runner's Knee (RK)/Patellofemoral Pain Syndrome (PFPS) and Shin Splints (SS), show one third (1/3) of significance difference (t value = 4.873) when tested @ **p < 0.05** with a constant value {c} of 2.571 and two third (2/3) of insignificance difference (t values = -4.949 and -1.112) when tested @ **p < 0.05** with constant value {c} of 2.571 using the degree of freedom equals five (i.e. df = 5) between the 'Yes' or 'No' answers given by NUNC athletes. This can also be witnessed in the frequency distribution tables, percentages and mean values. In conclusion, the finding shows that Njala University, Njala Campus (NUNC) athletes were experienced in the knowledge of prime prevention strategy in slowing the ageing process of athletes with respect to preventing sports injury like: Runner's Knee (RK)/Patellofemoral Pain Syndrome (PFPS), but minimum or little knowledge about preventing sports injuries like: Achilles Tendinitis (AT) and Shin Splints (SS). In recommendation, the most effective approach in improving athlete's knowledge in preventing sports injuries like: Achilles Tendonitis (AT), Runner's Knee (RK)/Patellofemoral Pain Syndrome (PFPS) and Shin Splints (SS), as prime prevention strategy in slowing ageing process amongst NUNC athletes is by giving them compulsory seminars, workshops, screening and remedial measures before and after any intra and extramural competitions.

Introduction

Health according to *Dorland (2003)* is an optimal state of physical, mental, and social wellness of an individual and not merely the absence of disease and infirmity. This is in line with the *World Health Organization (WHO) global recommendation (2010)* which state that health is a state of complete physical, social and mental-wellbeing, and not merely the absence of disease or infirmity. Within the context of health promotion, health has been considered less as an abstract state and more as a means to an end that can be expressed in functional terms as a resource that permits people to lead an individually, socially and economically productive life. Health is a resource for everyday life, not the object of living. It is a positive concept emphasizing social and personal resources as well as physical capabilities. According to the *WHO (2010)*, the main determinants of health include the social and economic environment, the physical environment, and the person's individual characteristics and behaviors.

It is perhaps a common perception that collegiate athletes are automatically healthier and more attentive to their overall wellbeing. Indeed, Nattiv and Puffer in, "Lifestyles and Health Risks of Collegiate Athletes," suggested that college athletes appear to be at a higher risk for certain lifestyle behaviors. The added emotional, physical, and mental stress from athletics may result in certain maladaptive behaviors in athletes. *Nattiv et al. (1991).*

Achilles tendon is found at the back of the ankle and is the largest tendon in the body. It transfers the force of muscle contractions to lift the heel. Achilles tendonitis (also Achilles tendinopathy) is tendinitis of the Achilles tendonitis, generally caused by overuse of the affected limb and is more common among athletes training under less than ideal conditions. *Luscombe et al. (2004).* Achilles tendinitis is an inflammation of the tendon, usually due to overuse, such as frequent jumping in basketball or volleyball (*Fenwick et al. 2002*). Achilles tendinitis is thought to have physiological, mechanical, and/or extrinsic (i.e footwear or training) causes. Physiologically, the Achilles tendon is subject to poor blood supply through the synovial sheaths that surround it. This lack of blood supply can lead to the degradation of collagen fibers and inflammation. (*Fenwick et al., 2002*). Tightness in the calf muscles has also been known to be involved in the onset of Achilles tendinitis. (*Maffulli et al., 2004*).

The most common cause of knee pain is runner's knee, known medically as patellofemoral pain syndrome. Runner's Knee is due to misalignment of the kneecap in its groove. The kneecap normally goes up or down in the groove as the knee flexes or straightens out. If the kneecap is misaligned, the kneecap pulls off to one side and rubs on the side of the groove. This causes both the cartilage on the side of the groove and the cartilage on the back of the kneecap to wear out. On occasion, fluid will build up and cause swelling in the knee, (*Dixit, et al., 2007*). Patellofemoral pain syndrome may also result from overuse or overload of the patellofemoral (PF) joint. For this reason, knee activity should be reduced until the pain is resolved. Those with pain

originating from sitting too long should straighten the leg or walk periodically. Those who engage in high impact activity such as running should consider a nonimpact activity such as swimming. (*Rixe, et al., 2013*). Shin splints, also known as medial tibia stress syndrome (MTSS), is defined by the American College of Orthopedic Surgeon as "pain along the inner edge of the shinbone (tibia)" *(Yates, et al., 2004).* Shin splints are usually caused by repeated trauma to the connective muscle tissues surrounding the tibia. They are common injuries affecting athletes who engage in running sports or other forms of physical activity, including running and jumping. They are characterized by general pain in the lower region of the leg between the knee and the ankle. Shin splints injuries are specifically located in the middle to lower thirds of the inside or medial side of the tibia, which is the larger of two bones comprised by the lower leg. *(Yates et al., 2004).*

Athletes are group of persons that are engaged in one or more form of competitive games and sports either because of reward or for physical fitness in the process of competition. *Weiss (1995)* discovered that athletes are more likely than non-athletes to exhibit maladaptive behaviors that are injurious to their health. Most athletes take different types of performance enhancing substances and also engage in cigarette smoking and alcohol consumption without considering the adverse effects therein.

Ageing is often associated with degenerative processes, which include a reduction in musculoskeletal strength, longer reaction times, an increased difficulty in respiration, possible increased towards obesity and a decrease in both anaerobic capacity and aerobic fitness *(Kirkwood & Austad, 2000).* Individual lifestyle such as cigarette smoking, sedentary activity, unhealthy diet, alcohol consumption and socioeconomic status increases the tendency for ageing related diseases World Health Organization *(WHO, 2002).* The recognition that physical fitness is a major marker of health status at any age has produced a wide range of studies on the influence of various factors on physical fitness levels, in particular the influence of body fat and physical activity *(Lennox, et al., 2008; D'Hondt, et al., 2009; Artero, et al., 2010;; Dumith, et al., 2010).* Increasing both aerobic and muscular fitness is essential for promoting health *(American College of Sports Medicine, 2007)* and should be a desirable goal in a training program *(Taanila et al., 2011).* According to *Long, (2004),* the tremendous levels of physical activity of an individual forces the heart of a sportsman to work like a pump which leads to partially irreversible left ventricular hypertrophy with impaired left ventricular diastolic filling. *Banks, et al. (2003),* concluded that when an individual person is engaged in professional sport, the same movement patterns that are repeated during long period time leads to professional illnesses that are usually typical for a particular sport. Hence, premature ageing which forces them to retire from active sport competition at a chronologically young age. According to

Muffuli et al. (2003), knowledge of prime prevention involves such things as knowing the risk factors associated with premature ageing of athletes and measures to be adopted in slowing the ageing process through noninvolvement in actions associated with such risks and appropriate regular screening which should be sport-skill specific and related to age and sex. Muffuli, further explained that individual flexibility, muscle balance and growth are evaluated against known risk factors so that skill specific conditioning can be implemented and deficits corrected.

This study only emphasized on the investigation of Njala University, Njala Campus (NUNC) athletes' knowledge in preventing sports injuries like: Achilles Tendinitis (AT), Runner's Knee (RK)/Patellofemoral Pain Syndrome (PFPS) and Shin Splints (SS), as prime prevention strategies in slowing ageing process ranging from levels 100-200 and 300-400 in Njala Southern Sierra Leone. The findings also compared the significance difference between the 'Yes' or 'No' questions and answers regarding the prime prevention strategies in slowing ageing process with respect to individual knowledge in Preventing Sports Injuries [Achilles Tendinitis (AT), Runner's Knee (RK)/Patellofemoral Pain Syndrome (PFPS) and Shin Splints (SS)].

Material and Methods

Selection of participants: The study was conducted on a total of 150 athletes mainly undergraduates [(95 male representing 63% and 55 female representing 37%; 70 Christians representing 47% {40 male Christians representing 27% & 30 female Christians representing 20%} and 80 Muslims representing 53% {55 male Muslims representing 36.6% & 25 female Muslims representing 16.6%}; 10 married representing 7% {6 male married representing 4% & 4 female married representing 3%} and 140 single representing 93% {89 male single representing 59% & 51 female single representing 34%}; 100 from South-East representing 67% {65 male representing 43.3% & 35 female representing 23.3%}and 50 from North-West representing 33% {30 male representing 20% & 20 female representing 13%})] were randomly selected without replacement from four Schools [(65 from School of Agriculture & Environmental Science representing 43% {40 male representing 26.6% & 25 female representing 16.6%}, 85 from School of Education & Technology representing 57% {55 male representing 37% & 30 female representing 20%})] at four levels [(125 from level 100-200 representing 83% {80 male representing 53% & 45 female representing 30%}, 25 from level 300-400 representing 17% {15 male representing 10% & 10 female representing 7%})], 90 within the age range of (18-25) representing 60% {60 male representing 40% & 30 female representing 20%} and 60 within the age range from (26-30+) representing 40% {35 male representing 23% & 25 female representing 17%} in years.

Instrument for measuring the parameter: The descriptive survey research design was used for the research. The variables tested were preventing sports injuries like: Achilles Tendinitis (AT), Runner's Knee

(RK)/Patellofemoral Pain Syndrome (PFPS) and Shin Splints (SS). The self-restructured and validated athletes' knowledge about prime prevention questionnaire (AKPPQ) was adopted as an instrument for testing the parameters that was originally used by *Okuneye, et al. (2011)*. The questionnaire had two sections: Section-A: demographic data and Section-B: data for the required variables. Two senior colleague lecturers in the Department of Human Kinetics and Health Education, School of Education, Njala University validated the questionnaire. The instrument was pre-tested on 50 athletes of Eastern Polytechnic, Kenema, Eastern Sierra Leone; using the test retest method with a high intraclass correlation coefficient (ICC) reliability ranging from 0.98 to 0.99 with the ANOVA technique as shown in tables **1-9** below respectively.

Test Procedures: The one hundred and fifty randomly selected without replacement NUNC athletes (n=150) mainly undergraduates were drawn from the range of 100-200 and 300-400 levels within the School range of Agriculture-Environmental Science and Education-Technology, Njala University, Njala Campus, were questioned before training session at the University Sports Complex to provide 'Yes' or 'No' answers to questions in the self-restructured and validated questionnaire by the researcher and some members of the academic staff of Human Kinetics and Health Education Department, Njala University, using the face to face question and answer technique. The answers provided by the respondents to the questions were recorded accordingly for statistical analyses.

Statistical Analysis: The frequency distribution tables, percentage, mean, standard deviation and inferential statistics of Dependent t-test (t) were used to analyze the data obtained from Njala University, Njala Campus (NUNC) athletes' about their knowledge of prime prevention strategies in slowing ageing process through a self-restructured and validated athletes' knowledge about prime prevention questionnaire (AKPPQ) that was originally used by *Okuneye, et al. (2011),* and also to find out any significant difference in the NUNC athletes' knowledge of prime prevention strategies in slowing ageing process. The results were tested @ level of significance of $p < 0.05$.

Results:

Table 1: Test-retest ICC reliability demographic characteristics of respondents *age according to gender* **using ANOVA technique [n=50]**

Respondents	Age (n=50)				X^2		Y^2		Ti		Ti^2	
	X	(18-25)	Y	(26-35 +)	T_1	T_2	T_1	T_2	Sum of T_1 and T_2		Sum of T_1 and T_2	
	T_1	T_2	T_1	T_2					X	Y	X	Y
Male	25	24	10	11	625	576	100	121	49	21	2401	441
Female	10	09	05	06	100	81	25	36	19	11	361	121
	*∑X = 68		*∑Y = 32		*∑X² = 1382		*∑Y² = 282		*∑Ti² =		2762	562
(n=2)	*(∑X)² = 4624		*(∑Y)² = 1024				*(ICC) Reliability *R = 0.99					

Table 2: Test-retest ICC reliability demographic characteristics of respondents *Marital Status according to Gender* **using ANOVA technique [n=50]**

Respondents	Marital Status (n=50)				X^2		Y^2		Ti	Ti^2
	X	(Single)	Y	(Married)	T_1	T_2	T_1	T_2	Sum of T_1 & T_2	Sum of T_1 & T_2

	T_1	T_2	T_1	T_2					X	Y	X	Y
Male	**30**	**29**	**08**	**09**	**900**	**841**	**64**	**81**	**59**	**17**	**3481**	**289**
Female	**10**	**09**	**02**	**03**	**100**	**81**	**04**	**09**	**19**	**05**	**361**	**25**
	*∑X = 78		*∑Y = 22		*∑X² = 1922		*∑Y² = 158		*∑Ti =		3842	314
(n=2)	*(∑X)² = 6084		*(∑Y)² = 484				*(ICC) Reliability *R = 0.99					

Table 3: Test-retest ICC Reliability Demographic Characteristics of Respondents *Religion according to Gender* using ANOVA technique [n=50]

Respondents	Religion (n=50)				X²		Y²		Ti		Ti²	
	X	(Muslim)	Y	(Christian)					Sum of T_1 & T_2		Sum of T_1 & T_2	
	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	X	Y	X	Y
Male	26	25	10	09	676	625	100	81	51	19	2601	361
Female	10	11	04	05	100	121	16	25	21	07	441	49
	*∑X = 72		*∑Y = 26		*∑X² = 1522		*∑Y² = 222		*∑Ti =		3042	410
(n=2)	*(∑X)² = 5184		*(∑Y)² = 676				*(ICC) Reliability *R = 0.99					

Table 4: Test-retest ICC Reliability Demographic Characteristics of Respondents *Region according to Gender* using ANOVA technique [n=50]

Respondents	Region (n=50)				X²		Y²		Ti		Ti²	
	X		Y						Sum of T_1 and T_2		Sum of T_1 and T_2	
	(South/East)		(North/West)		T_1	T_2	T_1	T_2				
	T_1	T_2	T_1	T_2					X	Y	X	Y
Male	**22**	**23**	**15**	**14**	**484**	**529**	**225**	**196**	**45**	**29**	**2025**	**841**
Female	**08**	**09**	**05**	**04**	**64**	**81**	**25**	**16**	**17**	**09**	**289**	**81**
	*∑X = 62		*∑Y = 38		*∑X² = 1158		*∑Y² = 462		*∑Ti² =		2314	922
(n=2)	*(∑X)² = 3844		*(∑Y)² = 1444				*(ICC) Reliability *R = 0.99					

Table 5: Test-retest ICC Reliability Demographic Characteristics of Respondents *School according to Gender* using ANOVA technique [n=50]

Respondents	School (n=50)				X²		Y²		Ti		Ti²	
	X		Y						Sum of T_1 and T_2		Sum of T_1 and T_2	
	(Edu./Tech)		(Ag./Env. Sc.)		T_1	T_2	T_1	T_2				
	T_1	T_2	T_1	T_2					X	Y	X	Y
Male	24	25	12	11	576	625	144	121	49	23	2401	529
Female	06	07	08	07	36	49	64	49	13	15	169	225
	*∑X = 62		*∑Y = 38		*∑X² = 1286		*∑Y² = 378		*∑Ti² =		2570	754
(n=2)	*(∑X)² = 3844		*(∑Y)² = 1444				*(ICC) Reliability *R = 0.99					

Table 6: Test-retest ICC Reliability Demographic Characteristics of Respondents *Level according to Gender* using ANOVA technique [n=50]

Respondents	Level (n=50)				X²		Y²		Ti		Ti²	
	X	(Level L_1-L_2)	Y	(Level L_3-L_4)					Sum of T_1 & T_2		Sum of T_1 & T_2	
	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	X	Y	X	Y
Male	**28**	**29**	**10**	**09**	**784**	**841**	**100**	**81**	**57**	**19**	**3249**	**361**
Female	**10**	**11**	**02**	**01**	**100**	**121**	**04**	**01**	**21**	**03**	**441**	**09**
	*∑X = 78		*∑Y = 22		*∑X² = 1846		*∑Y² = 186		*∑Ti² =		3690	370
(n=2)	*(∑X)² = 6084		*(∑Y)² = 484				*(ICC) Reliability *R = 0.99					

Table 7: Test-retest ICC Reliability Characteristics using ANOVA technique of Eastern Polytechnic Athletes Knowledge in the Prevention of Sport Injuries like: Achilles Tendinitis (AT) as a prime prevention strategy in slowing ageing process [n=50]

Items	Achilles Tendinitis {AT}		(N=50)		X²		Y²		TI		TI²	
	Yes	(X)	No	(Y)					Sum T_1 & T_2		Sum T_1 & T_2	
	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	X	Y	X	Y
1	10	09	40	41	100	81	1600	1681	19	81	361	6561
2	15	14	35	36	225	196	1225	1296	29	71	841	5041
3	12	11	38	39	144	121	1444	1521	23	77	529	5929
4	18	17	32	33	324	289	1024	1089	35	65	1225	4225
5	20	19	30	31	400	361	900	961	39	61	1521	3721
6	14	13	36	37	196	169	1296	1369	27	73	729	5329
	∑X = 172		∑Y = 484		∑X² = 2606		∑Y² =15406		∑Ti² =		5206	30806

$(\sum X)^2 = 29584$	$(\sum Y)^2 = 183184$		(ICC) Reliability *R = 0.98

(n=6)

Table 8: Test-retest ICC Reliability Characteristics using ANOVA technique of Eastern Polytechnic Athletes Knowledge in the *Prevention of Sport Injuries like: Runner's Knee (RK) /Patellofemoral Pain Syndrome (PFPS)* as a prime prevention strategy in slowing ageing process [n=50]

Items	Runner's knee {RK}/{PFP}			(N=50)	X^2		Y^2		TI		TI^2	
	Yes	(X)	No	(Y)					Sum T_1 & T_2		Sum T_1 & T_2	
	T_1	T_2	T_1	T_2	T_1	T_2	T_1	T_2	X	Y	X	Y
1	44	43	06	07	1936	1849	36	49	87	13	7569	169
2	30	29	20	21	900	841	400	441	59	41	3481	1681
3	36	35	14	15	1296	1225	196	225	71	29	5041	841
4	32	31	18	19	1024	961	324	361	63	37	3969	1369
5	29	28	21	22	841	784	441	484	57	43	3249	1849
6	38	37	12	13	1444	1369	144	169	75	25	5625	625
	$\sum X = 412$		$\sum Y = 188$		$\sum X^2 = 14470$		$\sum Y^2 = 3270$		$\sum Ti^2 =$	28934		

(n=6)
6534

$(\sum X)^2 = 169744$	$(\sum Y)^2 = 35344$		(ICC) Reliability *R = 0.99

Table 9: Test-retest ICC Reliability Characteristics using ANOVA technique of Eastern Polytechnic Athletes Knowledge in the *Prevention of Sport Injuries like: Shin Splints (SS)* as a prime prevention strategy in slowing ageing process [n=50]

Items	Shin splints {SS}			(N=50)	X^2		Y^2		TI		TI^2	
	Yes	(X)	No	(Y)					Sum	T_1 & T_2	Sum	T_1 & T_2
					T_1	T_2	T_1	T_2	T_2			
	T_1	T_2	T_1	T_2					X	Y	X	Y
1	14	13	36	37	196	169	1296	1369	27	73	729	5329
2	10	09	40	41	100	81	1600	1681	19	81	361	6561
3	18	17	32	33	324	289	1024	1089	35	65	1225	4225
4	12	11	38	39	144	121	1444	1521	23	77	529	5929
5	16	15	34	35	256	225	1156	1225	31	69	961	4761
6	22	21	28	29	484	441	784	841	43	57	1849	3249
	$\sum X = 178$		$\sum Y = 422$		$\sum X^2 = 2830$		$\sum Y^2 = 15030$		$\sum Ti^2 =$	5654	30054	
(n=6)	$(\sum X)^2 = 31684$		$(\sum Y)^2 = 178084$				(ICC) Reliability *R = 0.99					

Table 10: Njala University, Njala Campus Athletes knowledge in the *Prevention of Sport Injuries like: Achilles Tendinitis (AT)* as a prime prevention strategy in slowing ageing process [n=150]

NO.	ITEM-ONE: ACHILLES TENDINITIS {AT} (N=150)	YES (X)	%	(X-X̄)	(X-X̄)²	NO (Y)	%	(Y-Ȳ)	(Y-Ȳ)²
1	Do you know that Achilles Tendinitis (AT) can be linked to degeneration within the substance of the tendon (tendinosis) and other related anomalies amongst athletes?	30	20	-16.7	278.89	120	80	16.7	278.89
2	Has it occurred to you that preventing Achilles Tendinitis (AT) as one of the sports injuries can minimize the speed of ageing process amongst athletes?	50	33.3	3.3	10.89	100	66.7	-3.3	10.89
3	Are you aware that athletes exposed to Achilles Tendinitis (AT) during competition(s) suffer from paratenonitis (inflammation of the surrounding sheath)?	40	26.7	-6.7	44.89	110	73.3	6.7	44.89
4	Do you believe that Achilles Tendinitis (AT) as a sport injury speeds up ageing process amongst athletes?	60	40	13.3	176.89	90	60	-13.3	176.89

	ITEM	YES (X)	%	(X-X̄)	(X-X̄)²	NO (Y)	%	(Y-Ȳ)	(Y-Ȳ)²
5	Do you know that Achilles Tendinitis (AT) can also be linked to aching and burning pain especially with morning activities or exercises amongst athletes?	35	23.3	-11.7	136.89	115	76.7	11.7	136.89
6	Do you know that Achilles Tendinitis (AT) can be linked to friction with gentle palpation of the tendon during ankle motion amongst athletes?	65	43.3	18.3	334.89	85	56.7	-18.3	334.89
(n=6)	Yes (x) [Mean = 46.7 & SD = 12.8] No (y) [Mean = 103.3 & SD = 12.8]	280 = ∑X		∑(x-X̄)² =983.34		620 = ∑Y		∑(y-Ȳ)² =983.34	

Table 11: Dependent t-test (t) analysis of Njala University, Njala Campus Athletes Knowledge in the *Prevention of Sport Injuries like: Achilles Tendinitis (AT)* as a prime prevention strategy in slowing ageing process   [n=150]

ITEMS	ACHILLES TENDINITIS {AT} (N=150)		D (X-Y)	D²
	Yes (X)	No (Y)		
1	30	120	-90	8100
2	50	100	-50	2500
3	40	110	-70	4900
4	60	90	-30	900
5	35	115	-80	6400
6	65	85	-20	400
*(n=6)	*(∑D)² = 115600 *df = 5		* ∑D = -340 *t = -4.9491	*∑D² = 23200 *c = 2.571

Table 12: Njala University, Njala Campus Athletes Knowledge in the *Prevention of Sport Injuries like: Runner's Knee (RK)/Patellofemoral Pain Syndrome (PFPS)* as a prime prevention strategy in slowing ageing process [n=150]

NO.	ITEM-TWO: RUNNER'S KNEE {RK}/{PFPS} (N=150)	YES (X)	%	(X-X̄)	(X-X̄)²	NO (Y)	%	(Y-Ȳ)	(Y-Ȳ)²
1	Do you know that Runner's Knee (RK)/PFPS can be linked to impairment of the knee's physiology and other related anomalies amongst athletes?	95	63.3	-13.5	182.25	55	36.7	13.5	182.25
2	Has it occurred to you that preventing Runner's Knee (RK)/PFPS can minimize the speed of ageing process amongst athletes?	110	73.3	1.5	2.25	40	26.7	-1.5	2.25
3	Are you aware that athletes exposed to Runner's Knee (RK)/PFPS as one of the sports injuries suffer from pain, swelling, inflammation and dysfunction of the knee?	135	90	26.5	702.25	15	10	-26.5	702.25
4	Do you believe that Runner's Knee (RK)/PFPS as one of the sports injuries speeds up ageing process amongst athletes?	101	67.3	-7.5	56.25	49	32.7	7.5	56.25
5	Do you know that Runner's Knee (RK)/PFPS as one of the sports injuries can be linked to fracture and internal knee derangement amongst athletes?	120	80	11.5	132.25	30	20	-11.5	132.25

		Yes (X)	%	(X-X)	(X-X)²	No (Y)	%	(Y-Y)	(Y-Y)²
6	Do you know that Runner's Knee (RK)/PFPS as one of the sports injuries can also be linked to osteoarthritis of the knee and bony tumors in or around the knee amongst athletes?	90	60	-18.5	342.25	60	40	18.5	324.25
(n=6)	Yes (x) [Mean = 108.5 & SD = 15.4] No (y) [Mean = 41.5 & SD = 15.4]	∑X = 651			∑(x-X)² =1417.5	∑Y = 249			∑(y-Y)² =1417.5

Table 13: Dependent t-test (t) analysis of Njala University, Njala Campus Athletes Knowledge in the *Prevention of Sport Injuries like: Runner's Knee (RK)/Patellofemoral Pain Syndrome (PFPS)* as a prime prevention strategy in slowing ageing process [n=150]

ITEMS	RUNNER'S KNEE {RK}/{PFPS} (N=150)		D (X-Y)	D²
	Yes (X)	No (Y)		
1	95	55	40	1600
2	110	40	70	4900
3	135	15	120	14400
4	101	49	52	2704
5	120	30	90	8100
6	90	60	30	900
			* ∑D = 402	*∑D² = 32604
*(n=6)	*(∑D)² = 161604 *df = 5		*t = 4.8727	*c = 2.571

Table 14: Njala University, Njala Campus Athletes Knowledge in the *Prevention of Sport Injuries like: Shin Splints (SS)* as a prime prevention strategy in slowing ageing process [n=150]

No.	Item-Three: Shin Splints {SS} (N=150)	Yes (X)	%	(X-X)	(X-X)²	No (Y)	%	(Y-Y)	(Y-Y)²
1	Do you know that shin splints (SS) as of the sports injuries can be linked to stress fracture and other related anomalies amongst athletes?	45	30	-12.5	156.25	105	70	12.5	156.25
2	Do you believe that shin splints (SS) as one of the sports injuries can speeds up ageing process amongst athletes?	65	43.3	7.5	56.25	85	56.7	-7.5	56.25
3	Are you aware that athletes exposed to shin splints (SS) as one of the sports injuries suffer from pain in the shin bond, swelling, inflammation and tenderness of the skin around the shin bone?	70	46.7	12.5	156.25	80	53.3	-12.5	156.25
4	Preventing shin splints (SS) as one of the sports injuries; can this minimize the speed of ageing process amongst athletes?	75	50	17.5	306.25	75	50	-17.5	306.25
5	Do you know that flexor digitorum longus muscle imbalance and inflexibility can increase the possibility of shin splints (SS) as one of the sports injuries amongst athletes?	35	23.3	-22.5	506.25	115	76.7	22.5	506.25

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6	Do you also know that the tightness of gastrocnemius, soleus and planter muscles can increase the possibility of shin splints (SS) as one of the sports injuries amongst athletes?	55	36.7	-2.5	6.25	95	63.3	2.5	6.25
(n=6)	Yes (x) [Mean = 57.5 & SD = 14.1] No (y) [Mean = 92.5 & SD = 14.1]	$\Sigma X = 845$		$\Sigma(x-\bar{X})^2 =1187.5$		$\Sigma Y = 555$		$\Sigma(y-\bar{Y})^2 =1187.5$	

Table 15: Dependent t-test (t) analysis of Njala University, Njala Campus Athletes Knowledge in the *Prevention of Sport Injuries like: Shin Splints (SS)* as a prime prevention strategy in slowing ageing process [n=150]

ITEMS	SHIN SPLINTS {SS}	(N=150)	D (X-Y)	D²
	Yes (X)	No (Y)		
1	45	105	-60	3600
2	65	85	-20	400
3	70	80	-10	100
4	75	75	00	00
5	35	115	-80	6400
6	55	95	-40	1600
*(n=6)	*$(\Sigma D)^2$ = 14400	*df = 5	*ΣD = -120 *t = -1.1123	*ΣD^2 = 12100 *c = 2.571

Discussion of Findings:

Since ageing is a cause or major risk factor of the age related diseases and many other causes of mortality, there are growing efforts in ageing research to slow ageing and extend healthy lifespan, *Blagosklonny, (2009)*. This study only focuses on athletes' knowledge about preventing sports injuries like: Achilles Tendinitis (AT), Runner's Knee (RK)/Patellofemoral Pain Syndrome (PFPS) and Shin Splints (SS) as a prime prevention strategies in slowing ageing process amongst NUNC athletes. The frequency distributions, percentage (%), mean, standard deviation and inferential statistics of Dependent t-test (t) were collectively used to compute and compare the results of the findings. The Dependent t-test (t) results were tested @ p < **0.05** level of significance.

In discussion, the above findings show both significant and insignificant differences with regards to Njala University, Njala Campus (NUNC) athletes' knowledge about preventing sports injuries like: Achilles Tendinitis (AT), Runner's Knee (RK)/Patellofemoral Pain Syndrome (PFPS) and Shin Splints (SS) as a prime prevention strategies in slowing ageing process.

A significant difference of one third (1/3) was recorded as shown in table 13, (i.e. t-value = 4.8727) when tested @ $p < 0.05$ with a constant value {c} which is equal to 2.571, using the degree of freedom for Dependent t-test which is equal to five (i.e. df = 5) in the analysis above.

Similarly so, an insignificant difference of two third (2/3) was recorded in tables 11 and 15 respectively (i.e. t-values = -4.9491 and -1.1123) when tested @ $p < 0.05$ with constant value {c} of 2.571, using the

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degree of freedom for Dependent t-test which is equal to five (i.e. df = 5) in the analysis above. The findings also show, the responses of the respondents to the 'Yes' or 'No' questions and answers in frequency distribution tables, percentages, mean values and standard deviation as indicated in tables 10, 12 and 14 above. In table 12, greater number of respondents (NUNC athletes) had knowledge about preventing sports injury like: Runner's Knee (RK)/Patellofemoral Pain Syndrome (PFPS); in table 10 and 14, a good number of NUNC athletes had little or no knowledge about preventing sports injuries like: Achilles Tendinitis (AT), and Shin Splints (SS), as prime prevention strategies in slowing the ageing process as indicated in their respective percentages and mean values above. In similar research, *Alfredson, et al. (2012),* did find out in their study that Achilles tendon injuries were as a result of exceeding the tendons capabilities for loading. They concluded therefore, that it is important to gradually adapt to exercise if inexperienced, sedentary, or as in athlete who is not progressing at a steady rate. *Putra, et al. (2014),* also concluded in their study that Patellofemoral pain syndrome (PFPS) is a syndrome characterized by pain ranging from severe to mild discomfort seemingly originating from the contact of the posterior surface of the patella (back of the kneecap) with the femur (thigh bone).

Moen, et al. (2009), did display the fact in their study that with repetitive stress, the impact forces eccentrically fatigue the soleus and create repeated tibia bending or bowing, contributing to shin splints. They therefore concluded that, the impact is made worse by running uphill, downhill, on uneven terrain, or on hard surfaces and aslo improper footwear, including worn-out shoes, which contribute to shin splints. Also, *Okuneye, et al. (2011),* in their study concluded that athletes' did display knowledge of health risk behaviours such as injury prevention as primary prevention strategies to help prevent premature ageing.

Conclusion: This study was conducted with the focus of establishing facts about whether Njala University, Njala Campus (NUNC) athletes at Njala Southern Sierra Leone, who are given the responsibility to represent their institution in intra and extra-mural sporting competitions have knowledge in preventing sports injuries like: Achilles Tendinitis (AT), Runner's Knee (RK)/Patellofemoral Pain Syndrome (PFPS) and Shin Splints (SS), as prime prevention strategies in slowing ageing process, with the aim of recommending appropriate measures by which athletes can age actively and healthily. Based on the findings, it is concluded that a good number of NUNC athletes had a better knowledge about preventing sports injury like: Runner's Knee (RK)/Patellofemoral Pain Syndrome (PFPS); also, a good number of them lack the knowledge in preventing sports injuries like: Achilles Tendinitis (AT) and Shin Splints (SS), as prime prevention strategies in slowing the ageing process as shown in their frequency distribution tables, percentages, mean values and the calculated t-values recorded @ $p < 0.05$ above.

Recommendations: Based on the findings above, it is therefore recommended that; a comprehensive screening and remedial measures be carried out on Njala University, Njala Campus athletes before and after taking part in any intra and extramural sporting competitions on behalf of their institution and a compulsory seminars and workshops be given periodically to NUNC athletes in health education (physical fitness, first aid/remedial and wellness education) and ageing with special reference to the contraindications and prophylaxis associated with Achilles Tendinitis (AT), Shin Splints (SS) and Runner's Knee (RK)/Patellofemoral Pain Syndrome (PFPS) by academic staff members in the Department of Human Kinetics and Health Education, Njala University.

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