ORIGINAL

ADVANCEMENTS IN WEARABLE TECHNOLOGY FOR ENHANCING ATHLETIC PERFORMANCE AND TRAINING

Amiruddin bin Hamid

Faculty of Engineering, Universiti Malaya (UM), Malaysia.

ABSTRACT

This study gives an outline of different sorts of smart habiliments and their uses in well-being & athletics, classifies AI calculations, and presents the remote body region detector organization utilized for correspondence in habiliment detectors. Also, scholars talk about likely difficulties and improvement headings that might form the fate of insightful habiliments and intend successful answers for their proceeded with upgrade. This study presents important experiences toward the astonishing capability of intense wearables to change medical services and athletics. Wearable technology is considered as an optimistic approach to overwhelm all types of injuries experienced by athletes. Many wearable sensors exist, such as micro-electro-mechanical sensors (MEMS), inertial measurement units (IMUs), and flex sensors. These sensors have accelerometers, magnetometers and gyroscopes. These wearable technology-based systems remove the hindrances that occur by using video-based systems. These sensors provide real-time information and feedback in an authentic sports atmosphere. These wearables are small, lightweight, user-friendly, wireless, and able to analyze all movements and performance of athletes. Additionally, sensor technology can be used in extreme weather conditions and is waterproof. These sensors are used for different types of sports, such as skiing, swimming and snowboarding.

KEYWORDS: Advancement (AA); Wearable technology (WT); Enhancing Athletic performance (AP); Training (T)

1. INTRODUCTION

With the advancements in the modern world, wearable technology is

being applied to various fields, including healthcare, sports, entertainment, and the electronics industry. Over the last 20 years, extensive internet and sensor technology improvements have upgraded wearable technology to the level that it has become an essential and important part of our daily lives. Multiple definitions have been suggested to describe wearable technology, out of which one provided by Godfrey is defined as the devices worn on the person's body to monitor health conditions without requiring the need to perform testing. Despite the multiple ways to describe wearable technology, the common idea can be grasped in that wearable technology involves a system of sensors, sources of power, and units processing information from the body to give a desired output (Seçkin et al., 2023). In sports equipment, these wearable technology devices are also termed smart devices, which act as a tool for getting real-time data for the trainees, allowing the trainers to manage the training strategy according to the needs of an individual athlete's body. In this way, these technologies share a way to enhance the performance and experience for everyone, including coaches, athletes, and their fans (Steijlen et al., 2021). In the common technology behind the functioning of wearable equipment, there lies a sensor layer that makes up the device's foundation, as it senses data from an athlete's body. Later on, this data is transferred to a processor layer by using integrated circuits or analogue to digital converters and receivers, etc. In sports wearable technology, the data is sensed by motion, physical activity, physiological position, and conditions provided by the surrounding environment. There are various types of sports-related sensors in the market that help in providing the required results to coaches (Naddeo et al., 2017). For instance, physiological sensors are the types of wearable sensors that collect data from the athlete's body by sensing changes in biological processes occurring within the body. In this way, the data related to the athlete's health, condition, and performance is collected much more conveniently. Electromyography and electrocardiographic sensors are examples of physiological sensors that work by calculating the electrical activity produced by skeletal muscles and heart muscles, respectively. The sensor layer plays a major role in athletes' performance in detecting health and physiological states, which later helps trainers regulate training and prevent future injuries (Benson et al., 2018; Domínguez-Alonso et al., 2018).

Advancements in sensors have ultimately increased the levelling of wearable technology in the sports department. For instance, sensors based on functional near-infrared spectroscopy technology are available that can be worn and help monitor the athletes' brain activity during their training and help the coaches gain on-site and real-time information. It works on the principle of oxygen consumption, which alters the haemoglobin absorption properties during training (Cannavò et al., 2018). While training, the neuron consumes more oxygen, which later affects the hemoglobin absorptivity, and these detectors display results based on the amount of light scattered by the brain.

This helps in getting to know about the cognitive function of an athlete's brain so that a team's performance can be managed as required (Camomilla et al., 2018). Similarly, pulse-sensing wearables are present that can be placed on the body of the athletes to calculate the oxygen saturation in the body. For instance, pulse oximeters are attached to the athlete's fingertip to measure the level of blood oxygen by following the concept that deoxygenated and oxygenated blood absorbs more infrared and red lights. Another type is blood pressure sensors, which can help determine the athlete's cardiovascular fitness. These types of sensors commonly come in the shape of wristbands or cuffs and help in displaying results by inflating the cuff to obstruct the blood flow through arteries and then the pressure is released slowly. When the blood flow through arteries is resumed and stopped at the same time, the diastolic and systolic blood pressure values are corresponding (Yu et al., 2019). Similarly, another advanced wearable technology is the galvanic skin response, in which the sensors tend to calculate the skin's electrical conductivity, which is altered by changing moisture levels. When an athlete sweats, it increases the moisture level on the skin and thus the electrical conductivity. This increase in sweat is mostly due to any emotional stress or response. Therefore, by measuring the electrical conductance of skin, the stress level of athletes can be determined during competition and training (De Fazio et al., 2023; Quan et al., 2023). Furthermore, sports coaches also operate biomechanical sensors. In these types of wearables, the forces are applied to the human body, and the effects are studied on tissues, joints, and skeletal muscles. The sensors used in these types of technologies are either inertial measurement units or sensors of force calculations. Inertial measurement sensors are electromechanical sensors. However, in micro size, they include different types of sensors working together i.e., accelerometers that measure the acceleration produced by linear movement of the athlete (Benson et al., 2020). A magnetometer is also present, which measures the magnitude and direction of motion. Among them, A gyroscope attachment is also present that helps in the determination of rotational movements of the athletes while on the field playing. These types of sensors are mostly used in sports like swimming and analysis related to posture and tracking of exercises (Tedesco et al., 2021). The research study describes that Advancements in Wearable Technology for Enhancing Athletic Performance and Training. The research paper is divided into five specific sections. The first represents the introduction and research objective. The second section represents the literature review the third section also explains methods and tools & techniques. The fourth portion describe result and its description also that last section summarized overall research study and present recommendation related to athletic performance and training.

2. Literature Review

Researchers reveal that propels in innovation could help in growing best

adequate apparatuses ready to facilitate the troubles & expenses related with leading lengthwise experimental examinations in muscular companions & conceivably give best data on the natural ramifications of explicit outside load designs. Taking into account the new mechanical improvements for observing preparation load and the broad utilization of different devices for research & practical application, the point of this practice was to audit applications, difficulties, & chances of different adequate innovations (Cardinale & Varley, 2017). Studies suggest that adequate innovation is progressively indispensable for further developing games execution across ongoing information investigation and following. The two expert and novice competitors depend on adequate detectors to improve preparing productivity and rivalry results. The significance of customized gadgets & additional examination on competitor solace and execution influence is stressed. The rise of adequate imaging gadgets holds guarantee for athletic restoration and execution observing, empowering improved competitor wellbeing, recuperation, and execution in the games business (Seçkin et al., 2023). The motivation behind this audit is to acclimate medical care experts and group doctors about different accessible sorts of adequate detectors, examine their ongoing use, & current coming application in games medication.

Adequate execution gadgets & detectors are turning out to be all the more promptly accessible to everybody & sturdy groups. Propels in innovation have permitted person perseverance competitors, games groups, and doctors to screen useful developments, jobs, & biometric identifier to expand execution and limit damage (Li et al., 2016). Scholars suggest that wearables are an extravagant business with more development anticipated. Across this undertaking, essential discoveries and illustrations learned were amassed into sub topics along with: the games environment and hierarchical design, brand improvement, enlisting, consistence and engagement of competitors, and damage relief, inward and outside loads, & evaluating execution. These discoveries can be utilized by professionals to comprehend general innovation exercises and where to turn out the hole amid what is accessible against what is required (Luczak et al., 2020). This study gives an inside and out investigation of the powerful field of athletics Physiology and its basic effect on sports execution and preparing. It starts by analyzing the mix of athletics physiology in instructing and competitor preparing, featuring the shift regarding customized preparing systems. The study closes by integrating these bits of knowledge, highlighting their significant ramifications for the eventual fate of games Physiology & sturdy execution (Saadati, 2023). Studies elaborate that the extraordinary job of innovation in remodeling the scene of athletics execution and preparing. This study summarizes by stressing an amicable union of innovation with the human part of athletics, guaranteeing that mechanical headways upgrade, not eclipse, the quintessence of sturdy rivalry (Dovgan, 2023). Studies claim that portable gadgets are turning into a significant point of

interaction among clients and wellness exercises. Their abilities are enhancing dramatically, & latest methodologies are being created to follow athletics utilizing detectors that are generally utilized in advanced mechanics. These portable devices are regularly made related to cell phone application empowering the client to envision the information and offer it across informal communities, or contend with different clients (Guida et al., 2017). Scholars explain that the job of habiliment innovation for various clients & what for a requirement for these gadgets in regular day to day existences. It demonstrates how various detectors are persuasive in conveying different readings that are helpful in numerous ways with respect to wear credits. Habiliments are expanding in capability, & across coordinating innovation, clients are assembling more information regarding themselves (Aroganam et al., 2019). Studies show that competitors are consistently demonstrate for new innovations and treatments to acquire an upper hand to expand their wellbeing and execution.

Competitors have inclined toward the utilization of habiliment detectors to screen their preparation and recuperation. Habiliment innovations at present used by athletics groups screen the two inner and outside responsibility of competitors. The rise of adaptable and stretchable gadgets combined with the capacity to measure biochemical specimens & physiological boundaries have empowered the identification of key identifiers characteristic of execution and pressure, as evaluated in this study(Seshadri et al., 2019). Studies plans to evoke bits of knowledge about maintainable habiliments by researching ongoing progressions in habiliment innovation & uses therefor. Habiliment innovation has progressed impressively according to a specialized point of view, yet it has deteriorated because of obstructions unless entering more extensive community regardless of initial certain assumptions. This present circumstance is the inspiration driving the emphasis on examinations by several exploration bunches lately into habiliment uses that can offer the superior benefit from a mortal-situated point of view(Lee et al., 2016). Scholar studies reveal that the fuse and advancement of nanotech and innovation is take up predominantly affect mortal culture, tackling various obstructions being demonstrated by humanity explicitly in the area of athletics medication and restoration. With the progressions of nanoscience and different divisions, the sporting recovery and preparing afterwards wounds can be accomplished in a significantly further effective and remunerating way. By consolidating a combination of nanostructures, it is feasible to upgrade nearby blood flow in harmed sufferer, decrease torment, increment muscle adaptability & power, further develop equilibrium and cooperation, work with the recuperation of mutual capability, and improve sporting execution(Ansari, 2022). The motivation behind this study is to research buyers' acknowledgment and utilization of athletics and wellness habiliment gadgets in view of innovation status. The outcomes show that definite technology readiness impacts apparent usability and saw helpfulness,

and unfavorable technology readiness affected on perceived ease of use & perceived usefulness. Moreover, the multi-bunch investigation tracked down a favorable connection among technology readiness and perceived ease of use for particularly men clients(Kim & Chiu, 2019). Studies explain that a writing survey of person-PC cooperation deals with habiliment frameworks for athletics. Researchers distinguished 5 subjects beyond the studies: the various exploration viewpoints, the kind of athletics and athletes, the jobs of habiliment in athletics, their durability, & the various sorts of criticism(Mencarini et al., 2019). Scholars determined that ongoing technological progressions have empowered the formation of versatile, minimal expense, and subtle detectors with huge possibility to change the medical act of restoration. Corresponding uses empowered by cutting edge detectors that will empower reason behind care observing of brain action & muscle elements throughout development as well considered(Porciuncula et al., 2018). This study expects to introduce an extensive survey of the writing connected with the utilization of habiliment inactive detectors for execution examination in different athletics.

The survey recognizes the significance of detectors grouping, uses and execution boundaries in athletics for organized examination. The study additionally audits the innovation concerning detector engineering, organization and correspondence conventions, wraps different information combination calculations & their exactness while illuminating fundamental execution frameworks for a competitor(Rana & Mittal, 2020). Scholars reveal that habiliment gadgets identifying parts of the climate while keeping up with elevated flexibility to the person body can be utilized to assess natural quality & get additional precise ecological data. A definitive objective of this survey is to give latest experiences and bearings to the forthcoming turn of events & more extensive use of habiliment gadgets in different areas(Cheng et al., 2021). Researchers suggest that with quick overtures in innovation, habiliment gadgets have developed & been embraced for different purposes, going from basic gadgets utilized in helping wellness to additional perplexing gadgets utilized in helping a medical procedure. At that place a possible job for head-worn habiliment innovation & body detectors in medication & sufferer consideration. But, there is minimal logical proof accessible demonstrating that the use of such advances works on tolerant fulfillment(Iqbal et al., 2016). Researchers claim that associated habiliment Nano detectors are a basic piece of sturdy execution examination, damage and recuperation time evaluation, & moisturization investigation, empowering tip top competitors, mentors, and trainers to portray the day to day requests of athletics. This survey offers an outline of the most recent advancements in skin connected habiliment detector innovations with an accentuation on delicate stuff & elastic plans most reasonable in athletics(Ray et al., 2019). This study analyzes the effect of innovation on athletic execution, taking-into account the hypotheses of innovation and journey for further developed execution, kinds of game

advances, the benefits and impediments of game advances in current games. It is suggested that such making due, dealing with and utilizing athletic should be prepared to use sound judgment on the sort furthermore, utilization of game advancements that would aid the right presentation(Omoregie, 2016). Scholars show that habiliment detecting innovations are world-widely affecting the formation of oceanic industry amazing open doors & uses benefits that are helping the normal resident. By utilizing these innovations, individuals have changed the manner in which they dwell, associate with one another & their environmental elements, their everyday schedules, & by what means they screen their ailments (Perez & Zeadally, 2021). The principal objective of this study is to give a far-reaching outline of habiliment innovations and detecting frameworks to recognize and screen the physiological boundaries of sufferers during post employable restoration and competitors' preparation, & to introduce proof that upholds the viability of this innovation for medical care uses.

The objective of habiliment detectors is to beaten the impediments of ongoing gadgets, empowering the procurement of a client's important bodily functions straightforwardly from the body in an exact and harmless manner(De Fazio et al., 2023). Scholars gives a thorough outline of the development of athletic gear plan and the job of cross-disciplinary cooperation in improving person actual capacity in athletics. The study supports additional exploration around here, especially in the utilization of habiliment innovation & material development to upgrade sturdy execution later on(Shan, 2023). Researcher studies reveal that a transformation in the area of athletics and workout science has been introduced by the fast development of innovation. This upset essentially affects execution and has re-imagined the idea of the sturdy body. This study gives a smart survey of the advantages and downsides related with mechanical progressions in athletics, moving pursuers to settle on taught choices that will push sturdy execution higher than ever(Sangwan et al., 2023). Studies reveal that advanced innovations are reforming activities throughout different enterprises, involving the games area. Scholars utilized a blended strategies way to deal with research innovation reception rates and survey the apparent effects on execution, wounds, tasks, and fan insight in twenty-one games associations. By exploring latest things in innovation reception, surveying apparent effects, and taking into account partner perspectives across a coordinated technique, this review planned to give proof based direction to expanding the advantages of computerized change in a dependable way(Qi et al., 2024). (Yang et al., 2024).

3. Methodology

The research study determines that Advancements in Wearable Technology for Enhancing Athletic Performance and Training. The research paper based on primary data analysis for determine the study used SPSS

software and generate informative results included that correlation coefficient analysis, the chi square analysis, the model summary also that explain the linear regression analysis between them. according to the research Hynes and his squad forecasted that the days in which there is little technology access which measures qualitatively and gives verified surveillance to athletes will come to an end.

In a new era estimated within in coming five years, athletes will be able to access the new technology within in affordable range. Hynes and his prediction have been true and nowadays there is modern technology related to athlete's wearables. If we defined wearable, it would be the technology used to measure different physical and kinetic factors related to athletes. Athletic wearables demand increases with time and it's predicted that this demand progressively increase in the coming years (Luczak et al., 2020). The revenue for wearable sports technology comprises $2.8 billion from different companies such as Catapult, Zephyr, Zebra and Adidas. This revenue progressively increased to $ 15 billion in the coming years. Smart clothes which have sensors embedded in them its revenue predictable to increase by $4 billion in future. It is predicted that by $240 billion shipment of wearable athletic equipment's going to be happen in the coming year and it will increase progressively. Their high demand makes it possible for it more development and also affordable to all sports people. Most of the industries which make sports wearable are trying to make them comfortable and able to mitigate injuries in sports activities.
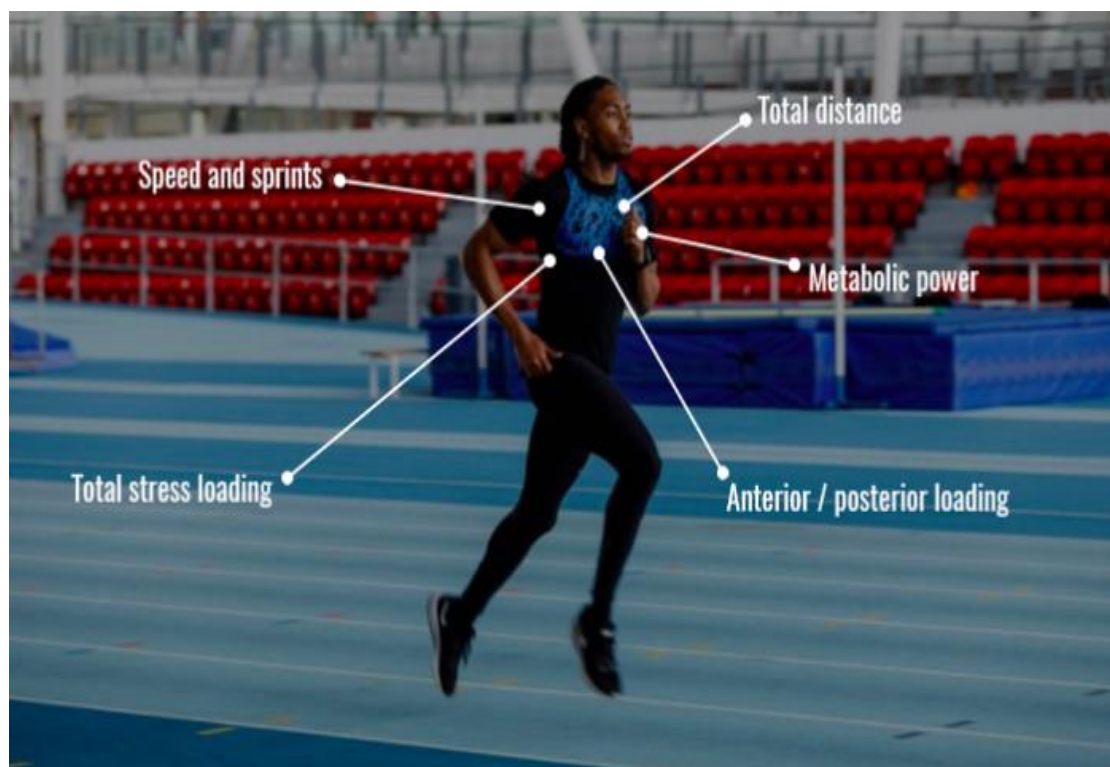

Figure 1: wearable Technology enhancing athletic performance

Table 1: Result of Correlations

CORRELATIONS

		WEARABLE TECHNOLOGY 1	WEARABLE TECHNOLOGY 2	WEARABLE TECHNOLOGY 3	ATHLETIC PERFORMANCE 1	ATHLETIC PERFORMANCE 2	TRAINING
WEARABLE TECHNOLOGY 1	Pearson Correlation	1	-.076	.192	.094	-.053	-.164
	Sig. (2-tailed)		.563	.142	.473	.686	.210
	N	60	60	60	60	60	60
WEARABLE TECHNOLOGY 2	Pearson Correlation	-.076	1	-.202	.054	-.278[*]	-.022
	Sig. (2-tailed)	.563		.122	.681	.031	.869
	N	60	60	60	60	60	60
WEARABLE TECHNOLOGY 3	Pearson Correlation	.192	-.202	1	-.151	-.003	-.251
	Sig. (2-tailed)	.142	.122		.249	.983	.053
	N	60	60	60	60	60	60
ATHLETIC PERFORMANCE 1	Pearson Correlation	.094	.054	-.151	1	.003	-.073
	Sig. (2-tailed)	.473	.681	.249		.983	.580
	N	60	60	60	60	60	60
ATHLETIC PERFORMANCE 2	Pearson Correlation	-.053	-.278[*]	-.003	.003	1	-.050
	Sig. (2-tailed)	.686	.031	.983	.983		.703
	N	60	60	60	60	60	60
TRAINING	Pearson Correlation	-.164	-.022	-.251	-.073	-.050	1
	Sig. (2-tailed)	.210	.869	.053	.580	.703	
	N	60	60	60	60	60	60

*. Correlation is Significant at the 0.05 Level (2-Tailed).

The above results of table 1 represents that correlation analysis in between wearable technology and athletic performance and training. The result demonstrates that Pearson correlation, significant value and number of observation between them. according to the result training shows that -0.164, -0.22, -0.251, -0.050 also that significant level is 21%, 86%,5% and 58% also that 70% significantly level between them. the athletic performance some positive and significant relation between wearable technology and athletic performance and training. Overall result of table-1 shows significant relation between them.

The common type of injury known as soft tissue injuries among sportspersons contributes to severe chronic pain and dysfunction that leads to the absence of athletes from sports. The main cause of these injuries might be poor training, overtraining and desiccation. The coming technology for wearable devices is premeditated to reduce these types of injuries through the analysis of vitals for instance, sweat analysis that is used to diagnose the disease, sportsperson performance and drug misuse analysis (Cardinale & Varley, 2017). This can only be promising with the aid of a probe that relies on the concentration of analysts.

Developing the chemical-based sensor for wearable athletic technology identified the biomarkers from the sweat of athletes. These biomarkers can be electrolytes, metabolites; proteins and small molecules and the analysis of sweat enables researchers to get more knowledge about the impact of physical activity and actions linked with injuries. Additionally, analysis of lactic acid and glucose burning in the absence of oxygen helps in knowing the abilities of athletes. In several games, such as rugby and football, brain injury remained a major issue.

In recent studies, the suspected players who will experience brain injury keep on coordinated protocol whether they return safely after retrieval. New technology for wearable equipment can be able to identify and analyze the pressure applied to the head while doing any physical activity. This technology is a good initiative to reduce brain injuries in athletes and, as a result, decreases the brain degeneration that occurs due to recurrent trauma in sportspersons.

Studies revealed that there are two devices: Linx IAS and Q-Collar that accomplish promising results in detecting the pressure on the head of athletes. Linx IAS is considered as the lightweight rectangular device positioned inside the head or skull that analyzes the total number of hits towards the head and directs the real-time information to the appropriate person. With the help of this wearable technology, the user would be able to see the hit location, force and impact.

3.1 Chi-square Analysis

Table 2: Results of Test Statistics

TEST STATISTICS						
	WEARABLE TECHNOLOGY 1	**WEARABLE TECHNOLOGY 2**	**WEARABLE TECHNOLOGY 3**	**ATHLETIC PERFORMANCE 1**	**ATHLETIC PERFORMANCE 2**	**TRAINING**
CHI-SQUARE	30.100[a]	19.600[a]	27.900[a]	24.300[a]	27.700[a]	25.900[a]
DF	2	2	2	2	2	2
ASYMP. SIG.	.000	.000	.000	.000	.000	.000
a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 20.0.						

The above-mentioned results of table 2 demonstrate the chi square analysis result represent chi square values and significant value of each variable included dependent and independent. The wearable technology 1,2 and 3 shows that chi square value is 30.100, 19.600 and 27.900 all of them are shows positive chi square rates. The athletic performance 1,2 consider as dependent its shows positive rate of chi square is 24.300 and 27.700 all of them present positive chi square rates. Table-2 describe significant level is 0.000 shows that 100% significantly level between them. the training is mediator variable result shows that 25.900 chi square rates and its significant level is 0.000 shows 100% significantly level between them.

3.2 Model Summary

Table 3: Results of ANOVA

ANOVA[a]						
MODEL		**SUM OF SQUARES**	**DF**	**MEAN SQUARE**	**F**	**SIG.**
1	Regression	.926	4	.231	.710	.588[b]
	Residual	17.924	55	.326		
	Total	18.850	59			
a. Dependent Variable: Athletic Performance 1						

The above-mentioned results of table 3 demonstrate that model summary result describes sum of square value, the mean square value, F statistic rate and significant value related to regression and residual level. The sum of square value is 0.926 its residual value is 17.924 the total value is 18.850 shows that positive sum of square rates. According to the table-3 result its present that mean square value is 23% and 32% average square value the F statistic rate is 71% and significant value is 58% respectively. There is several wearable technology devices used nowadays for instance GPS devices enable sports players to analyze the energy used and this was previously accomplished with the help of heart rate monitors. GPS tracking sensors positioned on the upper portion of the back detect the alternation in types of work in various positions and intensities. Studies showed that there is an inverse relation between the victory of the team and the workload on the team. In America, wearable sensors are used to identify brain injury by analyzing the head rushing towards any impact. Some types of sensors have been integrated into helmets padding, mouth sentinels analyzing the unobtrusiveness elements. Players in sports like baseball and volleyball experienced shoulder injuries with the help of wearable technology the movement of joints of the shoulder can be analyzed and real-time information can be archived. Wearable technology is a wireless device that does not need any main supply of electricity. The use of wearable technology in the present era cannot be unnoticed as this provides real-time information on sports persons and reduces the risk of injuries.

3.2 Linear Regression Analysis

Table 4: Results of Coefficients

COEFFICIENTS						
MODEL		**UNSTANDARDIZED COEFFICIENTS**		**STANDARDIZED COEFFICIENTS**	**T**	**SIG.**
		B	Std. Error	Beta		
1	(Constant)	1.765	.496		3.558	.001
	Wearable Technology 1	.126	.146	.117	.864	.392
	Wearable Technology 2	.020	.125	.021	.159	.874
	Wearable Technology 3	-.195	.141	-.195	-1.387	.171
	Training	-.104	.140	-.102	-.745	.460
a. Dependent Variable: Athletic Performance 1						

The above-mentioned results of table 4 describes that linear regression analysis related to independent variables and mediator variable. the result present that unstandardized coefficient value included beta rate, standard error rate. The table-4 also explains the t statistic value and significant value of each

variable. wearable technology 1 is the main independent variable result shows that the beta value related to the unstandardized coefficient is 0.126, its standard error rate is 14% the t statistic value is 86%. also, the significant level is 39% significant level. the wearable technology 2is another independent variable result describes that t statistic value is 0.159 the significant value is 87 percent significantly level between them. wearable technology 3 is another independent variable table-4 describe that its beta value is -0.102 the standard error rate is 0.140 shows that 14% error of the estimated value. The t statistic value is -0.745 the significant level is 0.460 shows that negative but its 46% significant level between the training and athletic performance. the wearable technology shows positive relation with athletic performance also that wearable technology shows significant relation with athletic performance.

4. Conclusion

To conclude, wearable technologies are immensely becoming part of athletes and coaches to calculate performance, and health issues and promote injury prevention strategies. Not only do the training sports get real-time data through these technologies but also competitive sports get benefit from these. The data related to kinematics and physiological components can be obtained from these types of wearable technologies. With the increase in the efficiency of these technologies not only the future assessment related to athletes becoming easier but also the need to perform long testing processes is also becoming lesser, leading the modern sports society towards a better and more convenient way of performance calculation. The research study determine that wearable technology related to the enhancing performance. the research based on primary data analysis for determine the research used SPSS software and generate result included correlation coefficient, chi square, also that explain the linear regression analysis between them. In sports activities, monitoring of training load is a newly expanded technology because of advanced technology techniques and training.

The existence of this technology is to improve and adapt the maximum benefits in athletic performance and to reduce the impact of overtraining and overreaching. The training methodology is based on the idea of maximizing the time and intensity of exercise since the time sports and physical activity developed. Early Wearable training technology uses the scientific approach as an important factor to monitor the progressive approaches and improve individual performance and training abilities. Overall research concluded that positive and significant relation in between wearable technology for enhancing athletic performance. Different training activities and exercises aimed to improve several physiological responses and also improve different biological functions of the body. Initial research related to scientific approaches objective to adapt the different paradigms for training and exercises.

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