EFFECTS OF NON-DOMINANT LEG TRAINING ON PERFORMANCE OF DOMINANT LEG: A STUDY OF LONG JUMP ATHLETES

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ABSTRACT:

Bilateral training involves standard movements that are simultaneously symmetrical. The aim of the study was to evaluate the bilateral motor performance effect on the dominant leg by training the non-dominant leg of long jump athletes who are deaf. Thirty-two athletes were randomly selected to participate. They were divided into a control group and an experimental group. The control group was given unilateral training, and the experimental group was provided with bilateral training for a period of 8 weeks. Pre, post and retention tests were given. An independent sample ttest was used to find the difference between experimental and control groups. Results revealed a significant different between both groups. Bilateral training significantly improves the performance of the dominant leg in long jumpers who are deaf.

Introduction:

Many sports are performed with unilateral movements, such as running, walking, playing handball and basketball (with some exceptions).

Although, there are also sports consisting of bilateral movements, such as power lifting, weightlifting, breast swim and the butterfly swim.

Roget's 21stCentury defines the word "unilateral" as "one-sided" and "bilateral" as "reciprocal" i.e. two-sided. Applying the definition to the previously mentioned sports, it can be concluded that depending on the sport, movements occur with either one leg or arm or with both legs and/or arms simultaneously (Masuda, Kikuhara, Takahashi, & Yamanaka, 2003).

People offer inclination to utilization of homologous parts on one sidelong 50% of the body (prevailing side) over those on the other (non-predominant side). Also, people performed better with the prevailing side as contrast with non-predominant side. Along these lines, prevailing side is for the most part utilized in the procurement and enhancement of engine skills (Annino et al., 2007).

Nonetheless, in numerous games like games (bounces, tosses and dashes), ball and football, and for the most part such diversions where lower body is utilized to play there are circumstance explicit activities in which utilization of non-prevailing part is as urgent as the predominant one.

To be effective under time or adversary weight, a player ought to have the capacity to act bilaterally. In this manner, to improve the execution of this nonpredominant side, an early routine with regards to the nonoverwhelming side is helpful.

Bilateral transfer is an outstanding marvel whereby preparing one appendage results in progress in the untrained homologous appendage.

A player's capacity of acting bilaterally is a fundamental con-

dition to be fruitful under time or adversary weight. Along these lines, an early routine with regards to the non-predominant body side is valuable to improve the execution of this no dominant side and in this manner delivers preference for the player's capacity of circumstance explicit activities.

Strikingly, bilateral practice can likewise be useful for skills or sports that are performed singularly like tossing (b-ball, handball) or table tennis (Coventry, O'Connor, Hart, Earl, & Ebersole, 2006).

When performing bilateral activities, individuals will in general produce more power with the overwhelming leg, as opposed to delivering an equivalent sum on the two legs (Myer et al., 2006).

Legitimately, this would result in the overwhelming leg winding up considerably progressively prevailing and making a more prominent asymmetry between the legs.

Normally, it would appear to be intelligent, for a precedent a

handball player, to apply onesided practices that place comparable physiological requests as the game itself and to avert asymmetry to happen.

The point of the investigation was to assess the bilateral engine execution consequences for prevailing leg from preparing the non-overwhelming leg of hard of hearing players in a long hop.

Hard of hearing individuals are broadly seen as being crippled and subsequently socially impeded and in this way hard of hearing individuals in game are uncommon and just a couple of models can be found since the commencement of pro game and thus they are regularly disregarded in term of training and practices that can improve their execution (Hewett, Stroupe, Nance, & Noyes, 1996).

This study provides a benchmark to the coaches and players about the bilateral transfer of motor skill from non-dominant leg to dominant leg.

Coaches can work on the standard set by this study for the transfer of skill of their players.

It also affects the overall performance of players. This study sets the footprints for researchers to investigate or inquire regarding the bilateral effects on sports performance.

This study also provides information regarding improvement in performance of different body parts.

Literature Review Deafness

Deafness is characterized as halfway or complete hearing loss. Deaf and in need of a hearing aid individuals can encounter anything from an extremely gentle to an all-out loss of hearing. Old grown-ups who much of the time experience a hearing loss, and therefore can conceivably encounter social disengagement, relationship breakdowns and an expansion in emotional wellness related issues (Hartman, Houwen, & Visscher, 2011).

Types of deafness

A person's hearing loss can shift contingent upon the pitch (recurrence) of the sounds being heard.

There are four kind of Deafness:

Sound-related Processing Dis- Sens orders

Sensori-neural Hearing Loss

Sound-related Processing Disorders happen when the brain has issues setting up the information contained in sound, for instance, getting talk and working out where sounds are coming from.

Conductive Hearing Loss

Conductive Hearing Loss happens when there is an issue with the Outer or Middle Ear which intrudes with the passing strong to the Inner Ear. It will in general be realized by such things as an extreme measure of earwax, Ear Infections, a punctured eardrum, a fluid creates, or unpredictable bone improvement in the Middle Ear, for instance, Otosclerosis.

It is progressively typical in children and indigenous peoples. Therapeutic methodology and a couple of sorts of hearing headways can be used to treat Conductive Hearing Loss, for instance, Bone Conduction Hearing Aids, Bone Anchored Hearing Devices and Middle Ear Implants (Kurková, 2015). Sensori-neural Hearing Loss happens when the meeting organ, the Cochlea, or possibly the sound-related nerve is hurt or breakdowns so it is unfit to exactly send the electrical information to the cerebrum.

Sensorineural Hearing Loss is regularly unending. It might be innate or achieved by the basic developing procedure, sicknesses, setbacks or introduction to rambunctious bustles, for instance, Noise-started Hearing Loss and specific sorts of manufactured mixtures and medications.

Sound-related Neuropathy is another structure where the nerves that pass on sound information to the cerebrum are hurt or breakdown. Advances, for instance, Hearing Aids, Cochlear Implants and Hybrid Cochlear Implants can help decline the effects of having Sensori-neural Hearing Loss (Martin, Shapiro, & Prokesova, 2013).

Blended Hearing Loss

A Mixed Hearing Loss happens when both Conductive Hearing Loss and Sensori-neural Hearing Loss are accessible. The sensorineural portion is constant, while the conductive part can either be never-ending or momentary. For example, a Mixed Hearing Loss can happen when a person with Presbycusis moreover has an Ear Infection (Walicka-Cupryś et al., 2014).

Deafness and Speech

Deafness can influence discourse capacity relying upon when it happens.

Pre-Lingual Deafness

This is a failure to completely or halfway hear before figuring out how to absolute or get discourse. A person with pre-lingual deafness was brought into the world with an innate distortion or will have lost hearing amid earliest stages.

In most of cases, individuals with pre-lingual deafness have hearing guardians and kin. Many are additionally naturally introduced to families who did not definitely know gesture-based communication.

They subsequently additionally will in general have moderate language advancement. The rare sorts of people who were naturally introduced to marking families tend not to confront delays in language improvement.

On the off chance that children with pre-lingual deafness are given cochlear embeds before the age of 4 years, they can secure oral language effectively. Oral language and the capacity to utilize expressive gestures are in all respects firmly interrelated.

That is the reason children with hearing misfortune, particularly those with extreme indications, may encounter deferred language advancement, yet additionally slower social improvement.

Thus, children with prelingual deafness chance ending up socially separated, except if they go to a school that has a well run exceptional necessities office with other children who have a similar condition. Children who relate to a "deaf subculture," or the individuals who have figured out how to utilize communication through signing, may feel less disengaged.

Be that as it may, some youngsters may encounter disengagement if their folks have not yet learned gesture-based communication.

There are instances of children with significant deafness who end up on the external edges of their hearing companions' groups of friends while not being completely acknowledged by companions with all out deafness, because of an absence of familiarity with communication through signing (Eliöz, Sitti, Koç, Murt, & Koç, 2013).

Post-Lingual Deafness

A great many people with hearing misfortune has postlingual deafness. They obtained spoken language before their hearing was lessened.

A prescription symptom, injury, contamination, or malady may have caused losing their feeling of hearing. In the vast majority with post lingual deafness hearing misfortune on sets bit by bit.

Family unit individuals, companions, and educators may have seen an issue before they recognized the handicap. Contingent upon the seriousness of hearing misfortune, the individual may have needed to utilize listening devices, get a cochlear embed, or figure out how to lip-read (Camporesi, 2013).

Individuals who experience hearing misfortune face various difficulties contingent upon when it happens and to what extent it takes to create.

They may need to get comfortable with new hardware, experience medical procedure, learn gesture based communication and lip perusing, and utilize different specialized gadgets.

A sentiment of detachment is a typical issue, which can now and again lead to misery and dejection. An individual with postlingual hearing misfortune additionally needs to confront the frequently troubling procedure of grappling with incapacity.

The condition may likewise present difficulties for family unit individuals, friends and family, and dear companions, who need to adjust to the meeting misfortune (Batten, Oakes, & Alexander, 2013).

Miscommunication can put a strain on connections, not just for the individual with the conference hindrance, yet in addition the general population around them.

On the off chance that the consultation misfortune is steady and has not yet been analyzed, relatives may erroneously trust that the person with the condition is ending up progressively far off.

One Sided and Respective Deafness

Single-sided deafness (SDD), or one-sided deafness, alludes to hearing debilitation in only one ear, while reciprocal deafness is hearing disability in both. Individuals with one-sided hearing impedance may think that it's difficult to carry on a discussion if the other individual is on their influenced side.

Pinpointing the wellspring of a sound might be progressively troublesome, when contrasted and the individuals who can hear well in the two ears.

Understanding what others are stating when there is a great deal of natural commotion may be hard. With next to zero foundation commotion, an individual with one-sided deafness has for all intents and purposes indistinguishable informative capacities from an individual with utilitarian hearing in the two ears.

Children brought into the world with one-sided deafness will in general have formative discourse delays. They may think that it's harder to focus when they go to class. Social exercises might be more testing than it is for children with no conference issues (Tindall, 2013).

Four dimensions of deafness

There are four dimensions of deafness or hearing disability. These are:

Gentle Deafness or Mellow Hearing Impedance

The individual can just identify sounds somewhere in the range of 25 and 29 decibels (dB). They may think that it's difficult to comprehend the words other individuals are stating, particularly if there is a great deal of foundation commotion (Dursun et al., 2015).

Moderate deafness or moderate hearing impedance

The individual can just identify sounds somewhere in the range of 40 and 69 dB. Following a discussion utilizing hearing alone is exceptionally troublesome without utilizing a listening device (Kozina et al., 2016).

Extreme deafness

The individual just hears sounds over 70 to 89 dB. A seriously deaf individual should either lip-read or utilize gesture based communication so as to convey, regardless of whether they have a portable hearing assistant (Zwierzchowska, 2013).

Significant Deafness

Anybody who cannot hear a sound underneath 90dB has significant deafness. A few people with significant deafness can't hear anything by any stretch of the imagination, at any decibel level.

Correspondence is done utilizing gesture based communication, lip-perusing, or perusing and composing (ŞENEL, YENI-YOL, KÖLE, & ADILOĞULLARI, 2014).

Transfer of Learning

In game, transfer of learning is commonly characterized as the impact of past involvement of playing out a skill on the learning of another skill or on execution of a similar skill in another specific situation.

This impact might be sure or negative. Positive transfer happens when past experience of playing out a skill is helpful for learning another skill or for execution of a similar skill in an alternate setting (Bortoli, Robazza, Durigon, & Carra, 1992). For instance, a hockey player may sensibly expect that past experience of hitting a ball with a hockey stick will transfer emphatically to learning a golf swing, and most golfers trust that rehearsing their swing in the vehicle leave before a round will transfer decidedly to the fairway.

Negative transfer happens when past experience of a skill represses learning another skill or upsets execution of a similar skill in an alternate setting.

For instance, ground strokes in tennis, which are best performed with a moderately firm wrist, as a rule transfer adversely to squash shots, which are best performed with an adaptable wrist, or the other way around.

In this section, testing and evaluating transfer of learning in game, speculations of transfer, and the hugeness of transfer in game are talked about (Causer & Ford, 2014).

Testing for Transfer

Scientists usually utilize a basic trial configuration to test for the impact of past understanding

of a skill on learning another skill (inter task transfer) or on playing out a similar skill in another specific circumstance (Goldberg et al., 2003).

One gathering of members (the trial gathering) rehearses the main skill and a second gathering (the control gathering) does not rehearse.

The two gatherings are then tried on either a second skill (now and again called the paradigm skill) or in an alternate setting. Any pre or post contrasts between the gatherings on the second test possibly credited to positive or negative transfer.

Assessing Transfer

There are numerous approaches to measure the measure of transfer starting with one skill then onto the next skill or starting with one setting then onto the next setting (Grohs & Reisinger, 2005).

Albeit no strategy is dependable, the most widely recognized technique utilized by scientists is to process the level of transfer, which is the relative distinction in execution scores of the trial and control bunches on the second skill or setting:

To represent, a scientist may lead a transfer investigation to inspect in the case of learning darts for multi week upgrades or represses arrow-based weaponry execution.

The analyst can utilize a transfer test to analyse the arrow based weaponry execution of a test bunch that rehearsed just their darts amid the week preceding or a control bunch that was kept from rehearsing (Mian, 1996).

Execution amid the initial ten preliminaries of the bows and arrows undertaking may uncover that the exploratory gathering strikes the bull's-eye of the objective on a normal of four events, while the control bunch strikes the pinpoint centre on a normal of one event.

Applying the above equation, the trial bunch indicates 60% transfer, proposing that they perform 60% better at bows and arrows contrasted and the control gathering. The measure of transfer is normally evaluated on the initial couple of preliminaries of execution since execution by the control bunch on later preliminaries might be frustrated by the training that bunch is accepting.

On the off chance that the proportion of execution demonstrates that lower esteems speak to better execution (e.g., mistake, speed), at that point the equation ought to be changed by turning around the numerator.

These speculations show that toughness of memory sway is a component of strengthened encounters in explicit assignments and the more the sturdiness of memory sway for beginning errands, the more the positive transfer.

As such, maybe every one of these stages assumed a job in an activity session for deferred transfer arrange lastly yielded such outcomes (Young, Dawson,& Henry, 2015).

Since following assignment is constant undertaking, its learning, maintenance and transfer can be checked on through Adams' shut circle hypothesis (1970) which is essentially about straight and moderate movements.

As per this hypothesis, movements are finished by contrasting the inputs from movement amid its execution and psychological dismissal. As such, one uses psychological dismissal toward the start of learning to accomplish a progressively exact movement.

Then again, there is an emotional distinction between maintenance attributes of ceaseless and single errands (Meylan, McMaster, Cronin, Mohammad, & Rogers, 2009).

Ceaseless errands are for the most part kept up over long maintenance interims, while maintenance is frail in single assignments.

This infers when bilateral transfer should be utilized so as to spare time and cash or for recovery of competitors and noncompetitors, can be focused on the non-predominant organ, with the goal that progressively bilateral transfer can be normal. Like other maintenance tests, nonstop assignment after some time would bear strong impacts and not be beset by absent mindedness (Teixeira, Silva, & Carvalho, 2003).

On the basis of above literature, the following hypothesis was tested:

H₁: there is positive effect of nondominant leg training on the performance of dominant and nondominant legs of deaf athletes.

Methodology

Study Design:

This study was experimental in nature. Pre-test post-test experimental type was applied from true experimental designs to conduct the study. A genuine trial is a sort of exploratory plan and is utilized to build up cause and influence connections.

There are three criteria that must be met all together for an analysis to be resolved as a genuine trial: At least one test and control gathering, analyst controlled variable and random task. Similarly, retention test was used along with pre-test post-test design. Maintenance tests are a typical marvel in most formal instructive settings.

Instructors expect, properly or wrongly, that understudies' execution on tests speaks to a substantial gauge of understudies' memory of the material or skill being referred to.

To analyse the collected data statistical analysis was made through SPSS 23.0 Software. Paired t test was used to analyse the data, paired t test is best suitable test as it is used in settings where comparison is made.

Settings:

Target Population of the study was deaf and dumb female student athletes of secondary and higher secondary school level, having age from 15 to 18 years of Lahore region.

Sample Size:

Random sampling technique was used to select 32 deaf and dumb female students from class 7 to 12 of 15 to 18 years of age. Straightforward irregular testing is the essential examining system where we select a gathering of subjects (an example) for concentrate from a bigger gathering (a populace).

Everybody is picked completely by some coincidence and every individual from the populace has an equivalent possibility of being incorporated into the example.

Sampling Technique:

Simple random sampling technique was used to select the participants for study.

Sample Selection:

Inclusion Criteria:

Female deaf and dumb student athletes of middle to higher secondary school level with age from 15 to 18 years were included in study.

Exclusion Criteria:

Male deaf and dumb student athletes were excluded and were not a part of our research work.

Effects of Non-Dominant	Leg Training	on Performance	of Dominant Leg
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Equipment:

Closed Reel Fibre Glass Measuring Tape was used to measure the distance of the jump.

Results

After applying Paired sample t-test to analyse the data collected through experiment to find out effect of manipulation on experimental group and to find out difference between control group and experimental group, following results has been deduced.

Table 5.1

Paired Sample t-test statistics Experimental group

Paired Samples Statistics							
		Mean	Ν	Std. Deviation	Std. Error Mean		
Pair 1	Test of respondents jump before practice	3.4363	16	.16741	.04185		
	Test of respondents jump after practice	3.5900	16	.12215	.03054		

Paired Samples Correlations							
		Ν	Correlation	Sig.			
Pair 1	Test of respondents jump before practice & Test of respondents jump after practice	16	.866	.000			

Pair	Paired Samples Test									
		Paired	Differenc	es						
			Std. De-	Std. Er- ror	95% Confidence In- terval of the Differ- ence				Sig. (2-	
		Mean	viation	Mean	Lower	Upper	t	df	tailed)	
Pair 1	Test of re- spondents jump before practice - Test of respondents jump after practice	153	.08686	.02172	20004	10746	-7.080	15	.000	

Table 5.1 reveals the results of Experimental Group before and after practice. The results of paired sample t test show that there is significance difference between the pre-test and post-test measurements.

The t value for Test of respondents jump before practice vs after practice ist(15) = -7.080, with p value .000.

Due to the means of the two jumps and the direction of the tvalue, it can be said that there is a statistically significant improvement in jump following the training programme from $3.44 \pm 0.16m$ to $3.59 \pm 0.12m$ (p < 0.0005); an improvement of $0.153 \pm .08m$.

 Table 5.2 Paired Sample t-test statistics Experimental Group (Non-Dominant Leg)

Paired Samples Statistics								
		Mean	Ν	Std. Deviation	Std. Error Mean			
Pair 1	Test of respondents jump before practice	1.5744	16	.17053	.04263			
	Test of respondents jump after practice	2.4587	16	.43440	.10860			

Paired Samples Correlations							
		Ν	Correlation	Sig.			
Pair 1	Test of respondents jump before practice & Test of respondents jump after practice	16	.143	.597			

	Paired Samples Test								
			Paire	d Differenc	es				
		95% Confidence In- terval of the Differ- ence		idence In- he Differ- ce			Sig. (2-		
		Mean	Std. Deviation	Mean	Lower	Upper	t	Df	tailed)
Pair 1	Test of respondents jump before prac- tice - Test of re- spondents jump after practice	88437	.44338	.11085	-1.12064	64811	-7.978	15	.000

Table 5.2 reveals the results of Experimental Group (Non-Dominant Leg) before and after practice. The results of paired sample t test show that there is significance difference between the pre-test and post-test measurements.

The t value for Test of respondents jump after practice is (15) = -7.978, with p value .000.

Due to the means of the two jumps and the direction of the tvalue, it can be said that there is a statistically significant improvement in jump distance following the training programme from 1.57 ± 0.04 m to 2.46 ± 0.43 m (p < 0.0005); an improvement of $0.88 \pm$ 0.4m.

Table 5.3 Paired Sample t-test statistics Control Group (Dominant Leg)							
Paired Samples Statistics							
Mean N Std. Deviation Std. Error							
Pair 1	Test of respondents jump be- fore practice	3.4338	16	.18740	.04685		
	Test of respondents jump after practice	3.5269	16	.15094	.03774		

Effects of Non-Dominant Leg Training on Performance of Dominant Leg:

Paired Samples Correlations						
		Ν	Correlation	Sig.		
Pair 1	Test of respondents jump before prac- tice & Test of respondents jump after practice	16	.965	.000		

	Paired Samples Test									
			Paired Differences							
		Std. Devia-	Std. Error	95% Confidence Inter of the Difference				Sig. (2-		
		Mean	tion	Mean	Lower	Upper	Т	df	tailed)	
Pair 1	Test of respond- ents jump before practice - Test of respondents jump after prac- tice	09313	.05735	.01434	12369	06256	-6.495	15	.000	

Table 5.3 reveals the results of Control Group (Dominant Leg). The results of paired sample t test show that there is significance difference between the pre-test and post-test measurements. The t value for Test of respondents jump before practice vs. after practice is (15) = -6.495, with p value .000. Due to the means of the two jumps and the direction of the tvalue, it can be said that there is a statistically significant improvement in jump distance following the training programme from 3.43 ± 0.180 m to 3.53 ± 0.15 m (p < 0.0005); a decline of 0.09 ± 0.05 m.

Graph 5.1 Graphical Representation of Experimental Group (Dominant Leg)



Graphical representation of experimental group (Dominant leg) shows the difference in performance of individual participants in pre and post- tests, where green bar is showing the difference in performance after treatment or practice.

Graph reveals that participant 2, 3 and 14 showed very little improvement while rest of the participants showed significant improvement.

Graph 5.2



Graphical presentation of post-test and retention test of participants

Graphical presentation shows that all the participants had performed better in post-test that was taken right after the practice sessions. While in retention test their performance is decreasing due to break in practice.

Graph 5.3



Graphical presentation of pre-test and post-test of participants.

Graphical representation of experimental group (Non-Dominant leg) shows the difference in performance of individual participants in pre and posttests, where green bar is showing the difference in performance after treatment or practice. Graph reveals that participant 13 showed little improvement and 15 did not show any progress, while rest of the participants showed significant improvement.

Discussion

Considerable proof for crossinstruction has been shown in grown-ups for contra lateral homologous muscles, for example, the quadriceps, elbow flexors (EF) and hand grasp muscles. Both non-critical (with moderate speed unconventional preparing) and noteworthy cross80 instruction impacts (high speed offbeat preparing) in a similar report, different reports have appeared extending from little (for example 3.8-5%) to extensive upgrades (for example 35%, 52%, 77%).

What's more, one-sided flighty constrictions of the prevailing lower arm were accounted for to save contra lateral muscle volume following a month of lower arm immobilization (Meylan et al., 2009).

In the grown-up writing, the cross-instruction impact after one-sided quality preparing of the predominant appendage is very strong when contrasted with lesser or non-huge enhancements with one-sided preparing of the non-prevailing appendage.

In any case, not all crossinstruction examines show more noteworthy transfer after prevailing appendage quality preparing (Kibler, Press, & Sciascia, 2006).

Ongoing work by Coombs revealed symmetrical crossinstruction after prevailing or non-predominant preparing in right-gave people with a handheld weight, wrist augmentation task.

Coombs et al. proposed that the qualities of the errand and the preparation worldview (for example metronome-paced) could represent some disparity crosswise over investigations.

While surveying past research that thinks about one-sided lower body obstruction preparing to bilateral lower body opposition preparing, there have been not many investigations that straightforwardly look at the two preparing programs over some stretch of time (Young, 2006).

Moreover, there have been even less investigations of this nature that look at squat preparing styles on already obstruction prepared competitors.

The two most significant examinations have been finished by McCurdy et. al. using the altered single leg squat (MSLS) and the bilateral back squat (BBS).

Consequences of an eightweek preparing study utilizing a fundamentally the same as preparing plan to that of the present investigation on untrained people varied significantly when contrasting the outcomes with those of this examination (Young, 2006).

In the untrained people, the one-sided bunch performed fundamentally better over the bilateral gathering on the one-sided hop stature (p=0.001) while in the prepared competitors the onesided hop tallness was appeared to be fundamentally the same as between gatherings.

Additionally, in the untrained people, there was no huge distinction in relative change between gatherings at post-test when contrasting the 5RM squat with pre-test measures.

In the present investigation, there was a critical contrast in percent change of 5RM squat with the BBS bunch having an essentially more prominent relative change at post-test (p=.043) than at pre-test.

These distinctions could be credited, because of preparing status contrast between studies, the capacity to put higher loads on the BBS for the competitors when contrasting the heaps with the MSLS.

The hole between the measures of outright weight for the activities when looking at gatherings may have been littler because of the absence of past opposition preparing (Stöckel & Wang, 2011).

The impacts of one-sided and bilateral plyometric preparing on power and bouncing capacity in ladies and recommended that one-sided plyometric practices upgraded power and hopping execution in a shorter period contrasted with the bilateral plyometric practices that the additions in execution would last more.

In the present investigation scientist see the after effect of prevailing leg preparing on nonoverwhelming leg where a huge improvement can be seen on onesided leg preparing (Stephens, Lawson, DeVoe, & Reiser, 2007).

Conclusion

After the careful analysis of data collected through experiment on deaf and dumb students in order to view the effect of nondominant leg training on dominant leg it can be said that there is improvement found in dominant leg performance.

It is also found that with the training performance of nondominant leg has also improved as they have tried multiple attempts of long jump to give their best which automatically improves their performance and their consciousness about their performance enhances their performance.

Experimental group as they were given treatment in term of multiple training drills to enhance their performance and after implementation of 8 weeks training program of dominant and non-dominant leg, it is found that performance of dominant leg of participants was improved which is quite natural.

Talking about performance of non-dominant leg, in 8 weeks training drills of non - dominant leg it is very obvious that nondominant leg was also used and strength and ability of nondominant leg was also improved which was cause of performance enhancement in post-test. Performance of non-dominant leg was not improved as improvement was shown in dominant leg because all the trainings were implemented with according to dominant leg if the focus would on non-dominant leg the performance would enhance more. In control group, there was slight improvement in the performance of dominant leg with training.

In retention test which was taken after some gap of post-test performance the of nondominant leg decreased because during the gap participants left their training and due to training performance their degap, creased. Secondly, due to principle reversibility even performance of elite players decreased if they left their training for more than two weeks. Similarly, due to training gap participants' performance of non-dominant leg decreased. At the end it can be concluded that training of nondominant leg has a significant effect on performance of dominant leg, when both are trained simultaneously.

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