Employment Methodology of Proposed Specific Agility Tests as a Basis for Planning and Controlling Specific Physical Preparation of Badminton Juniors Experimental Guiding Study for Coaches

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Introduction

The researcher into the development process of global sports training notices a remarkable decline in training based experience compared to training based measure, the trainer uses the measure information to determine the training condition of the athlete before the training program, according that base the trainer can guess and estimate the achievable level of the athlete throughout the next training period and the following determination of training objectives and planning (3: 13). Moreover, the role of the measure information about the development frame of training condition is revealed through longitudinal analysis for training plans then taking the needed procedures to word the future training objectives and control the content and methods of training which means a lot for the success of training process (24: 25). Using the measure information enables us to estimate the possibility of athlete to take part in sports competitions if he achieves the demanded sports form, this makes sports training controlling process to develop the athlete level in all different performance through planned factors which makes it more effectively and positively eligible in the future (19: 54). The controlling process becomes one of the most important procedures of the

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training process to admit that achieving a high sports level can't be made without good controlling process towards the achievement level (3: 13), to cope with the development in sports competition, the struggle about breaking records and promotion of the achievement level which needs developed methods of evaluation and measurement to achieve the highest sport performance (53: 150). It's not condemned that the experts use the measurement as a head coin with training control to point at the integration of these two processes in the modern sports training, thus the effective sports controlling of physical abilities can't stand without the methods of measurement applying (33: 233).

Harre (1982), according to the produced results of the correct evaluation of performance using the proper tests, assures that it sets the best base and considered to be a remarkable top for planning, controlling and regulation sports training (29: 244). Bartonietz (1992) ensures that the effective sports training controlling requires trusted measurement results (7: 12). The measurement through training planning process is considered as a necessary and vital factor to control the sports training (19:24). Grosser & Neumaier (1988) shows the measurement role (diagnostic of efforts) in the sports training according to several functions such as training content and plans support, organizing its processes and examining its effectiveness in addition to training output and evaluation support. It's also an educational means that helps players to self-control throughout training, it's also a helpful means to recognize sports talent (24: 24).

Kuhn et al (2004) shows that diagnostic procedures (measurement), training objective formulation (planning) and training procedures are in fact accurately coherent dynamic processes in training process. They can't be isolated in the most complicated training control (36: 39) (Fig 1), Training control process, training regulation and several definitions of sports training are considered a main merits for the modern sports training as Martin et al (2001)(40: 29), Neumann et al (2000) considers it as a main base in training process which means a lot to the success of training process throughout more effective application to sports training (47: 81).

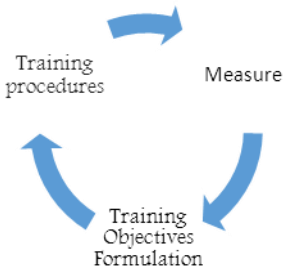


Fig. 1: Relationship between Measurement & Sports Training

Multerer's definition, (1992) refers to that importance; he sees the training control includes all the needed procedures for the training process effectiveness regarding the training objectives (43: 205). Froböse (2000) regards the determination of the individual training condition of the athlete is a main step in the sports training (20: 181). According to Abdul Maksoud's opinion (1995), we can predict the future condition and control the training in the best way not only by the prediction but also by the accurate analysis of the present condition as well (3:74). Marei (2009) sees that as long as the measurement has an effective role in training process, it's illogical to have any model to control training without it in its stages (39: 52).

The measurement process is revealed in Fig. 2 as Grosser et al (1986) refers as guided accommodation (short/long terms) scientifically supported among all the necessary procedures for planning, application, following-up, evaluation and the correction of training path to get the sports achievement into the model level (27: 12). Abdul Fattah & Shaalan (1994) see all these steps are coherent, integrated and inseparable. They also include all aspects of training process to reach the highest sports level according to the current abilities of the athlete training condition (1: 29).

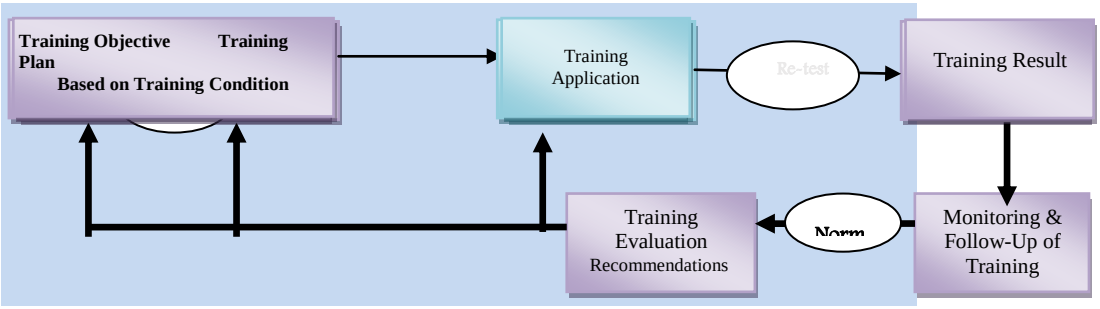


Fig. 2: bath of Controlling and Regulation of Training (Grosser et al 1986, p.13)

Fig. (2) Refers to what Grosser et al (1986) called the dynamic system of a group of processes (27: 13). The processes with each other according to level standards in the shade of the expected objectives. Also Fig. (2) shows that our use of measurement comes in several positions in training systems where we can define training condition which is the base of training objectives formulations, these objectives should be reached through specific periods (short/long period) (3: 59). In a reference to standard values of physical abilities that need standards as guiding reference values (25: 39). After the execution of training period, there's a measure application to extract training results and define the training condition comparing to aimed standard values from training (see Bös 2004, p.14 & Bös 1987, p. 23). We can evaluate the training process (Immediate

Evaluation) by comparing the standards of the objectives to the produced values of the follow-up tests. This comparison reveals if it's necessary to do correction in the training path (Objectives, plan and training procedures) (25: 39) (7: 12) or its objective is only to keep this path (3: 60). Hartmann (2002) shows that procedures are necessary to make the sports training effective (3: 77), Weineck (2007) in the shade of controlling and regulation of training process ensures the variety of training plans on the base of results of training and competition monitoring (62: 48). However accurate training plan is, it isn't more than a prediction. There's a need to follow-up this plan to enable us to ensure its validity (3: 13). In our opinion, it depends on the trainer's awareness of measuring employment mentioned in Fig. (2) and his control to training process.

We see the badminton sport although its changeable and dynamic nature is strong eligible to have roots and methodology for the measurement application in the modern sports planning. It has recently witnessed a remarkable development in game rules, attack and defense performance, all of these are direct results of the use of varied and developed methods to promote all the game requirements especially the skill and physical side which is reflected on the level of the speed and force of performance during competition (4: 2). The performance approach of badminton is the analysis of the continuous change of the body position or what we call Agility as Cinthuja et al (2015) refers (14: 16). The player has to change his movement according to his opponent strike direction fast. Agility enables the player to perform his skills successfully while moving on the ground or in the air (2: 163). Grice (2008) ensures that agility as the key component of badminton that improves the performance level in matches. The lack of agility hinders performing several tasks inside the Court; on the other side, its availability helps the player to move fast in different directions using his footwork properly and quickly to achieve success (22: 221).

Agility is defined as" The individual's ability to

change his direction quickly" (56: 342). Agility appears in forms of motor of performance which entails the speed and direction of body positions or stopping then sprint also coordination the speed of adjusted motor performance in the form which suits the changeable situation of the game's requirements (2: 163), depending on Hassanein's (2006) in the correct direction and the needed necessary timing of movement (31: 362). According to the training outstanding Chu et al (2006) defines agility as 1) a quickly decelerate, 2) change direction, 3) accelerate again (15: 18). According to Martin et al (1999) orient ability agility defines the change in body position in place and time, thus the agility is space-time-oriented anticipation (41: 84). There is an agreement between the definition of agility in the point of view of Chu et al (2006) and the nature of badminton performance requirements, the players goes ahead towards the Shuttlecock to stop fast and strikes properly, then he changes his direction and back again to get the base position in the midcourt. Using the golden rule in the defense tactic performance "Back to the midcourt as quickly as possible after striking and take care of your opponent not to force you gradually and suddenly to be nearer to the net which means the reduction of your strike sufficiency, in addition to having many gaps in the Backcourt (5: 162,165) (50) (16) (28). Griffin et al (1997) explains it as defending space on own court is one of the most important training Skill duties (23). On the other side the experts ensure that command and control training of the direction and the speed of (Ball) Shuttlecock (35), and the training of start and acceleration act important tasks in the physical-skill preparation for racket sports (34). Frederick et al (2014), Hardan & Khalil (2013) ensure that trainers should focus on the agility training and development, that never comes without standardized tests for specific agility of badminton help in the diagnosis process and recognizing the progress level in physical skill which represents a specific importance of the skill performance (19: 10) (28: 232).

Despite the importance of agility in badminton Marei & Salem (2016), Young & Farrow (2006) agree on its dealing in researches to fill the gap of lack of specific information in the field of diagnosis in specific agility which the trainer can get through the measurement (38) (65: 24). The study of Marei & Salem (2016) contributes in setting agility tests on the network for juniors; however trainers use general agility tests rationing for badminton players such as side step test, shuttle run, quadrant jump, SEMO agility test, right boomerang run, LSU agility obstacle course, Illinois agility run, and 505 agility tests...etc. (59). These tests lacks some weak points such as rationing on badminton players, even what have been rationing on badminton players may be for researched objective as a study of Marei & Salem (2016) which is directed to face the drop shot and the main aim in setting tests is footwork agility on the net (38), or aims at comparing the agility tests pre tasks to the performance of the same test without pre movement directions using the light system as in Frederick et al (2014) to recognize the differences the senses decisions in speed of performance (19), or aims at the measurement of functional abilities requiring the performance like aerobic capacity according to Wonisch et al (2013) (63), Hughes & Fullerton (2001) (32), or the functional responses related to the performance such as heart rate, concentration lactic, anaerobic ability and recovery (Chin et al, 1995)(14). So many researchers agree with Serpell et al (2010) (52), Farrow et al (2005) (18), to find a determined measurement of agility according the different performance nature in each sports activity, Hughes & Fullerton (2001) ensure the importance of the developed tests which reflect the requirements of skill-physical performance sustained on the movement pattern applied in competitions, this determines the degree credibility and validity in measuring the specific abilities in sports activity (32), The specific tests applied on participants representing beneficiaries of community sports activity are better than the others from another society ; however

similar are the two societies (31: 181).

In the shade of the great development in badminton and the great interest of the Saudi Federation for badminton to cope with this development, the research of planning methodology for junior specific preparing is considered the most important base, where we can notice the differences in skill-physical abilities among players into the global comparison. This happens because of several factors which we can't know in our two last decades studies analysis, trainers used general test to measure agility to estimate the juniors' levels and the highest levels in that ability(agility) to succeed the skill an planning performance in badminton thus the measure information couldn't benefit in determining training objectives, moreover the development of the scientific measurement tool to recognize the specific agility level as a coordination ability is important to succeed the skill performance for juniors in badminton and it should be constructed and developed according to aware study of the concept outstanding in skill-physical performance. Regarding the movement duties related to the game situation on the legal court area to present the privacy of the sport, to help trainers judge the sufficiency of training in specific planning, controlling and follow-up training according the based training objectives rooting the specific measurement usage in planning for the modern sports training in badminton.

Research objective

The research aims at studying the validity of some proposed tests for agility as a base in planning and controlling the specific physical preparing for badminton juniors under 14.

The study objectives are nested together:

- Suggesting some agility specific tests based on references and pilot to analysis the juniors performance according to the legal rules, skill tasks and play strategy.
- To check the validity of those tests after the crisis modification and Scientific Coefficients, to Application in badminton junior participants.
- Planning methodology of specific preparation for footwork for juniors in

accordance with measurement information especially standard levels (Percentiles) for measured tests as guiding of badminton trainers for juniors.

- The study of effect of the suggested methodology in planning and controlling sports training in the stage of specific preparation to follow-up the training condition through the preparation period for juniors.

Hypotheses

In the light of the research objective, the researchers suppose the following:

1. We can get specific agility tests that measure the player ability of footwork on the net and in all the area court and the backcourt to cope with the skill-physical performance requirements in attack-defense condition for badminton juniors.
2. The proposed tests for specific agility measurement achieve accepted scientific criteria that ensure its validity through applying it in the training process.
3. The measure information about the footwork agility participates objectively in planning and controlling of specific preparation for badminton juniors.

Procedure of Research Methodology

In the light of the research objectives, the researchers use the survey-descriptive method in building tests and achieving its scientific criteria on the participants of badminton juniors under 14, and the experimental method to recognize the validity of proposed tests, planning methodology and controlling for training process regarding the trainers experience to be suitable for the research.

Participants

The study is applied on random samples of the recorded badminton juniors in the badminton training centers in Al Baha, Dammam in Saudi Arabia (80 juniors) under 14. The sample characteristics (age 13.64 ±0.49 years, Height 159.56 ±5.12 cm, Weight 53.84 ±4.72 kg, and training age 3.58 ±0.42 years), The descriptive statistic results refer to homogeneity of the chosen participants in the main changes and the sequence factor is acceptable 0.45- :0.57

Measures

The stages of building proposed tests for specific agility

- The reference and pilot to prepare a proposed form about the specific agility tests Buschmann et al (2002), Badtke (1995) and others agree that agility is just a motor agility to estimate the changed target to the place and the body movement concerned with the changeable court or the changeable objects like opponent, ball (shuttlecock) processing data (13: 14) (6: 393), Weineck (2003) sees that there's a possibility to divide the agility definition into orient ability, spatially and temporally. Although the two abilities can be separated, they often come integrated. In racket sports such as return of shots, the temporal orient ability means timing plays a central role to succeed the performance. The opponent shuttlecock direction in different area in the court requires a great deal of peripheral vision or by other words spatially orient ability. The player can organize and arrange his movement according to the opponent's movement in the direction of the different ball shots. (61: 542). This determines a referential frame to the proposed tests identity to measure the agility movements; this is agreed by badminton trainers and researchers in Al Baha and Dammam in Saudi Arabia. There's a lack of footwork ability and change direction for juniors that impede their sports performance. There's also a lack of objectivity and playing plans especially in defense, this makes junior to let some gaps in the court to be exploited by his opponent as a result of uncovering his court. All the opinions agree on the importance of the footwork ability to promote the badminton sports level, a lack of specific agility tests which measure the footwork ability of juniors or the court in the training field represent an obstacle to evaluate the sports juniors level. In addition, it's considered a great challenge for trainers to follow-up their players' progress objectively with modern sports training requirements.

We all agree with the results of the studies of Marei & Salem (2016), Frederick et al (2014), Hardan & Khalil (2013), to supply a standardized tests for specific agility for badminton to help the trainer in measuring and to follow the progress level

throughout the training process (38) (19) (28). Regarding Marei & Salem (2016), recommendations are referential frame in our study to build specific tests, which ensure:

1. The specific agility and developed tests are used to estimate the movement ability of juniors in the parts of court as a whole and on the net, taking care of building other complemented tests concerning with footwork in the Backcourt to achieve the standard levels for juniors, to enable the trainer to plan and controlling the footwork training objectively according to those levels not based on the trainers' experience.
2. Regarding Badminton Shuttlecock shooter machine in measuring and developing agility for badminton juniors can measure temporally and spatially ability also it can anticipate the position of shuttlecock and the return performance, this requires some processing for a long time from moving in previous determined directions like in tests in item (1) which includes a movement plan based on previous information. Frederick et al (2014) recommends it in his study. He ensures the importance of the impervious plan tests like in tests using Shuttlecock shooter machine to measure specific agility for badminton player that agree with the nature of badminton sport which requires speed in changing directions and making decisions according to the badminton movement and the opponent (19).

In the light of the sports performance concerned with badminton sport in footwork, speed return whether the player can bend his leg with the striking hand (stabbing by leg or jump). Using the legal descriptions of the court, the stage's duties of proposed and adjusted tests are determined:-

- Test to measure footwork agility on frontcourt (net) Marei& Salem 2016 (38)
- Test to measure footwork agility to backcourt
- Test to measure footwork agility in all court (modified from Marei & Salem 2016 (38)
- Test to measure the effectiveness of Unsystematic strikes in the frontcourt (net) using Shuttlecock shooter machine
- Test to measure the effectiveness of Unsystematic strikes in all court using Shuttlecock shooter machine.

- The formulation of the proposed specific agility tests

In line with the scientific concept, Applied of the definition of agility: Chu et al 2006 (15: 18), Weineck 2003 (61: 542), Buschmann et al

2002 (13: 14), Twist & Benicky 1996 (60), Badtke 1995 (6: 393), Expert beliefs and results of research studies in the field of badminton: Marei& Salem 2016 (38), Frederick et al 2014 (19), Wonisch et al 2003 (63), Gi 2002 (21), Hughes & Fullerton 2001 (32), Pauole et al 2000 (48), Chin et al 1995 (14), our proposition following tests:

- Net-Footwork-Agility Test

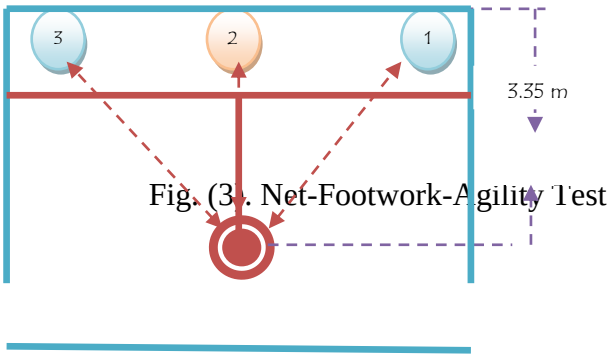


Fig. (3). Net-Footwork-Agility Test

Fig. (4). Backcourt-Footwork-Agility Test

- All Court-Footwork-Agility Test

The test aims at measuring the footwork agility on the net for the badminton juniors. It uses only a half of the court according to fig. 3. The cones can be put on lines which are far from the corners on a distance of 50 cm of the sideline. After light warm-up and experimenting the performance the players move from the midcourt as fast as they can, catching their racket in the determined directions organized forward and diagonal to reach the cone stabbing his right leg to shot forehand in stage 1, and shot backhand in stage 2, rise shot in stage 3 and returning backward the court to get the base position, the time of test performance can be measured by a stopwatch 1/10 of a second, the player gets two trials and a break for two minutes between them recording the least time.

-Backcourt-Footwork-Agility Test

This test aims at measuring the footwork agility in the back court for the badminton juniors. It uses a half of the court according to fig (4), the cones are put on lines on a distance of 50 cm from the sideline and after a light warm-up and experimenting the performance the players move from the midcourt as quickly as he can

catching his racket in the determined directions organized backward and diagonal to reach the cone using smash forehand in stage (1) and (2) and backhand shot in stage (3) returning forward the court to get the base position, the time of test performance can be measured by a stopwatch 1/10 of a second, the player gets two trials and a break for two minutes between them recording the least time.

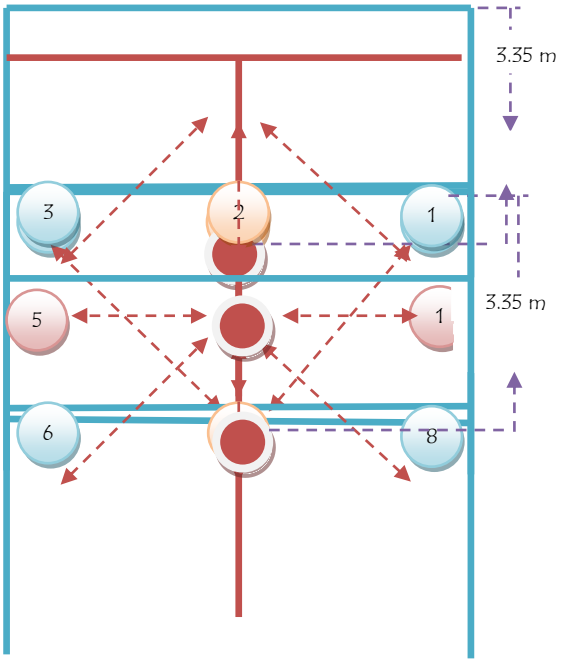


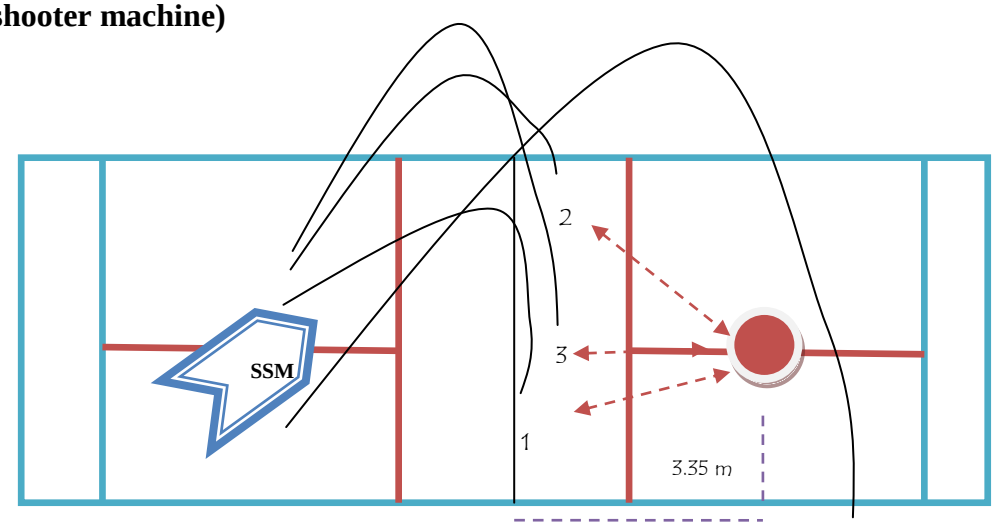
Fig. (5) All Court-Footwork-Agility Test

This test aims at measuring the footwork agility in front court, back court and sides for the badminton juniors. It uses a half of the court according to fig (5), the cones are put on lines on a distance of 50 cm from the sideline and after a light warm-up and experimenting the performance the players move from the court as quickly as they can catching his racket counter clockwise in the determined directions moving with side steps without chasse using shot forehand in stage (1) moving side steps using his right leg and turning his body left and backhand shot in stage (5) forward and diagonal to reach the cone stabbing with his right leg in all stages with forehand shot in stage (2), and

backhand shot in stage (4), rising shot in stage(3), backward to the court to get the base position, on the contrary in stages (6,7,8) backward steps then be acceleration to the forward. In stages(7, 8) to reach the cone using smash forehand shot, in stage (6) to reach the cone using backward shot by turning left, the time of test performance can be measured by a stopwatch 1/10 of a second, the player gets two trials and a break for two minutes between them recording the least time.

- Frontcourt-Footwork-Agility Test (Shuttlecock shooter machine)

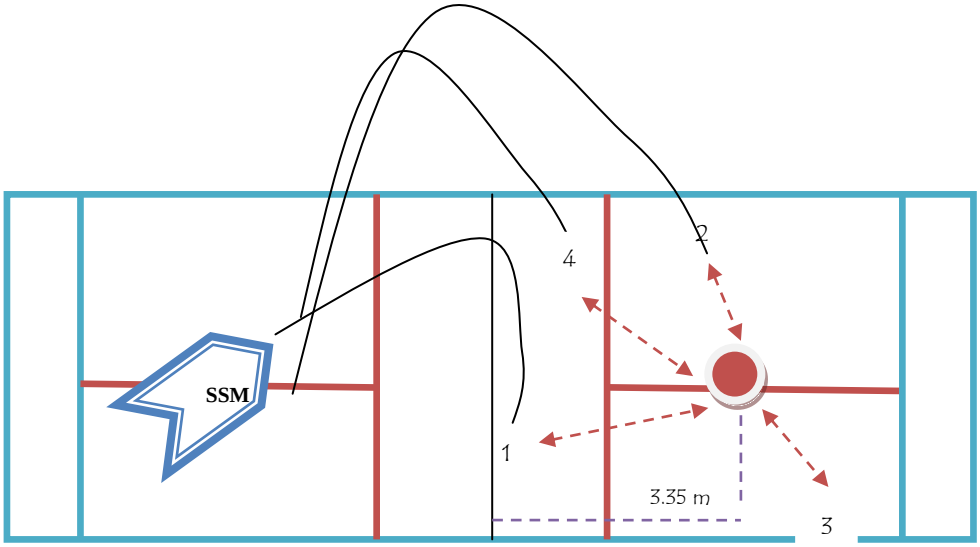
The test aims at measuring the effectiveness of return shots in random from the automatic shuttlecock shooter machine (SIBOASI S3025), the player takes the base position in midcourt setting and modifying the shooter to 20 Shuttlecock per minute Fig. (6) lobbing 15, 45 (1:3) thus all the drop shots fall in random on the net, the player moves suitably to return all shots to the opponent's Curt, the effectiveness of the player is measured(%) dividing successful shots into libeler shots using the equality the number of good shots/15x100



SSM: Shuttlecock shooter machine

Fig. (6). Frontcourt-Footwork-Agility Test (Shuttlecock shooter machine)

All Court-Footwork-Agility Test (Shuttlecock shooter machine)



SSM: Shuttlecock shooter machine

Fig. (7) All Court-Footwork-Agility Test (Shuttlecock shooter machine)

The test aims at measuring the effectiveness of return shots in random from the automatic shuttlecock shooter machine (SIBOASI S3025), the player takes the base position in midcourt setting and modifying the shooter to 20 badminton per minute Fig. (7) lobbing 20-60 (1:3) thus all the shots fall in random on all parts of court ,the player moves suitably to return all shots to the opponent's Curt, the effectiveness of the player is measured (%) dividing successful shots into libeler shots using the equality the number of good shots/20x100.

Standardized of proposed Agility Tests (Validity, Reliability, Objectivity)

To get the final form of the proposed tests we should see the experts' opinions and do practical experiments to get (Validity, Reliability and Objectivity) to achieve the survey goals .The experts (8)agree to the survey (1 completely disagree: 5 agree) and this ensure the suggested content-logical validity for

applying. There's a comparison study between applied test & T-drill test (Mackenzie, 2005), as an outside-critical test to measure agility, Fig. (8) to estimate the validity. The player should stand on the high starting position on T (cone A), run forward (10m)to touch the first cone upon the angle between the base and the horizontal segment (cone B), move (5m) inside steps on right to (cone D), then move (10m) in side steps to touch (cone C)on left, after that move inside steps to (cone B), Run backward (10m) to the end point (cone A), recording time (1/10) sec. (37: 70-71). To compare the results of suggested tests for agility with results of time ground contact during jumping (average of four jumps). The Just Jump Test (SKU7610) from the power systems (Fig. 9) which contains a square jumping pad (27 inch) connected with hand held computer (Marei & Salem 2016) (38). The comparison deals with the higher and lower Quartet for (specific or unspecific players) to get discrimination validity, all these help recognizing the test ability to distinguish the different levels of juniors in specific agility.

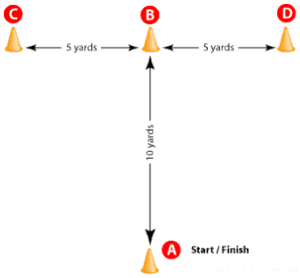


Fig. (8) T drill test

Fig. (9) Just jump test

In addition to two days according to Beekhuizen et al (2009)(8), Sheppard et al (2006) (56) using the same test protocol in the first apply, then reapply proposed tests to measure the reliability using Test–retest method, the correlation is studied among two Judges to realize its objectivity, the proposed tests applied in Feb. 2016 before the training preparation program, there was a descriptive meeting to explain the tests and its correct

instructions for performance before 48 hours of the tests according to Young & Willey (2010)(64) Sheppard & Young (2006) (55).

Standard levels for proposed tests for agility

Standardized tests acts a good possibility to support us with the individuals categories in the group, according to Bös & Tittlbach 2007, this means to distribute individuals into groups according to their performance to help the group in training load, then achieve individual training control in the best way (9: 125). So the standard levels plays central role in planning and controlling the sports training, it's also used to determine training conditions for the athlete in measuring ability to define the aimed developed limits through connecting the present training condition in percentage, and wording goals to get the highest degree in a measurable quantity, consequently there are many instructions to modify training contents according to the wording aims by the use of standard score. Grosser & Neumaier (1988) ensure use the standard score information as a reference. This means to use reference values in training control (24: 46), so the study needs building standard table for proposed agility tests (Tab. 1), which are gotten from the research results on anticipants (80) juniors from Baha and Dammam .

Tab. (1)

Standard levels of Specific Agility Test of Badminton juniors

Standard Levels	Standard Score Z-Score	Specific Agility Tests				
		Net-Footwork-Agility Test	Backcourt-Footwork-Agility Test	All Court-Footwork-Agility Test	Frontcourt-Footwork-Agility Test (Shuttlecock shooter machine)	All Court-Footwork-Agility Test (Shuttlecock shooter machine)
very poor	**5**	7.40	7.52	17.83	46.67	45.00
	10	7.20	7.28	17.64	46.67	45.00
	15	7.11	7.21	17.60	46.67	50.00
	20	7.10	7.18	17.45	48.00	50.00
poor	**25**	6.80	6.91	17.35	53.33	50.00
	30	6.72	6.76	17.16	53.33	55.00

Follow Tab. (1)

Standard levels of Specific Agility Test of Badminton juniors

Standard Levels	Standard Score Z-Score	Specific Agility Tests				
		Net-Footwork-Agility Test	Backcourt-Footwork-Agility Test	All Court-Footwork-Agility Test	Frontcourt-Footwork-Agility Test (Shuttlecock shooter machine)	All Court-Footwork-Agility Test (Shuttlecock shooter machine)
	35	6.67	6.72	16.63	53.33	55.00
	40	6.47	6.55	16.04	53.33	55.00
average	**45**	6.26	6.37	15.90	53.33	55.00
	50	6.21	6.32	15.90	53.33	57.50
	55	6.20	6.30	15.65	60.00	60.00
	60	6.06	6.15	15.60	60.00	60.00
Above average	**65**	6.03	6.12	15.10	60.00	60.00
	70	6.00	6.08	14.80	60.00	65.00
	75	5.86	5.94	14.80	65.00	65.00
	80	5.52	5.67	14.62	66.67	65.00
very good	**85**	5.40	5.56	14.44	66.67	65.00
	90	5.40	5.49	14.43	66.67	70.00
	95	5.36	5.47	14.22	73.33	70.00

The standard tables of agility tests are very important but there are some requirements and limits to use in training process, Mechling & Effenberg (2006) see that there are requirements concerned with the participants and the Judge to apply the tests to determine the motivation richness and weakening for the participants, all these effect on the test objectivity, confidence and standard through application in training process (42: 85). Marie (2009) sees that there is an exchanged relationship among validity, applicability and quality of standard, if there is any mistake in standard building, the applicability effects negatively. Classification of individuals into homogeneous groups using old standard levels is shameful, use standard levels out the participants (age, sex, Geographical area) there is a possibility of making mistakes in results (38: 82), so the standard tables come to express the study participants and its limits according to the age and training stage and the nature of sport specific activity to ensure content -logical validity, criteria related validity and objectivity to refer its importance in planning and controlling of training specific

agility for badminton juniors in Saudi Arabia.

The main Experiment:

Employment

Methodology of Measure Information for Planning and Controlling Specific Agility Training In Preparation Period "Experimental Guiding Study for Coaches of Juniors Badminton"

The experts in training ensure the importance of measurement to succeed the sports training; Kuhn et al (2004) (36: 39), Neumann et al (2000) (47: 81), Grosser & Neumaier (1988) (24: 19) Harre (1982) (29: 244), as it's considered the support for planning and controlling the training process, especially as in Delp (2006), Bös (2004), Multerer (1991), which concerned on content and objectivity (17: 37)(11: 10)(44: 142), according to Neumann et al (2001) it depends on the trainer's success to combine training analysis with measure results (46: 91), on the contrary Bös (1987) put the methodology of trainer to measure throughout two main goals:

- Determination current training condition "*current diagnostics*" which means before training this happens by comparing the physical abilities results and the reference level standard (age- gender- and athletic performance) to word the training objectives.
- Determination developing training condition "history diagnostics" as a result of training application through the repeated application of measurement which enables the coach to judge training process specially following the training procedures, then we can take the decision whether we change or keep the training plan (10:23).

Planning and controlling of training process should depend on the measure information that defines the training condition in addition to the standards levels of the aimed abilities. It's considered in the current study in the light of physical profile of agility for juniors (Fig. 10), every player has a profile according to the comparison between the current player performance in the applied tests and the standardized levels of the tests results (Tab. 1) to list the weak and strong points in his movement in all court. In a successive step, the standard score is regarded to determine the player's level in one of the tests under research is a shot point to put training objectives logically and gradually for the training season. They should be distributed on stage objectives according to the highest standardized degree to the expected level at the end of the training period.

	Training Condition			The estimated level of tests				
	Current		Target	very poor	poor	average	Above average	very good
	Test Result	Standard Score/Levels	Standard Score/Levels					
Net-Footwork-Agility Test	6.20	55 Middle	80-85 good/ v good					
Backcourt-Footwork-Agility Test	6.37	45 Middle	75 good					
All Court-Footwork-Agility Test	17.60	15 very week	50 Middle					
Frontcourt-Footwork-Agility Test (Shuttlecock shooter machine)	%53.33	35 week	65 good					
All Court-Footwork-Agility Test (Shuttlecock shooter machine)	%60.0	55 Middle	80 good					

Fig. (10). Agility Profile of Badminton Juniors (Plyer X from Experimental Group)

To recognize the validity of the study methodology in using measure information employment based on the standardized levels for applied tests of agility(survey). It was conducted an interview with 3 trainers from Dammam Training area to know the tests and its application and the way of employing results in planning of preparation stage (Fig. 10), distributing it on sub objectives using standard scores as above mentioned and they showed their cooperation in running the methodology study in planning and controlling the physical preparation process. They're regarded (14 junior from participants) as an experimental group. From Al Baha we took 3 trainers with their juniors (12 junior from participants) as a controlling group. Measurements are applied on juniors in the time of applying on the experimental group without using its results in planning and controlling physical preparation, which occurred according to the trainers' experience in the traditional way. The experiment was applied for 8 weeks during (1 March 2016: 30 April 2016)

then specific agility tests were applied every 2:3 weeks. It included pre and posttests in addition to having two in-between tests, without interfering in the training content and followed methods that matched with the plan of the confederation during the preparation period.

Statistical Analyze

Using the (SPSS) Statistical package of social science, we applied the descriptive statistics, the rate of change percentage, the simple Coloration, t test.

Result & Discussion

- **Basic scientific coefficient of the proposed tests of specific agility (validity to applicate in training process)**

Tab. (2)

statistical significances of the basic scientific coefficients) Validity, Reliability, Objectivity) of proposed Specific Agility Tests

Statistical Analyze / Measures	Validity Coefficient										Reliability Test-Retest	Objectivity
	content-logical Validity Experts agreement%	Convergent Validity		Discrimination Validity								
		Spearman Ground Contact Time	Spearman T-Drill-Test	High Quartet		Near Quartet		Diff.	t	Eta coefficient		
				Mean	SD	Mean	SD					
Net-Footwork-Agility Test	1.13	0.844**	0.812**	5.47	0.17	7.18	0.16	1.71	**32.34	**0.98	**0.97	**0.97
Backcourt-Footwork-Agility Test	1.25	0.851**	0.817**	5.58	0.18	7.29	0.19	1.71	**29.32	**0.98	**0.96	**0.98
All Court-Footwork-Agility Test	1.38	0.866**	0.911**	14.42	0.21	17.67	0.28	3.25	**41.15	**0.99	**0.97	**0.98
Frontcourt-Footwork-Agility Test (Shuttlecock shooter machine)	1.13	0.697-**	0.859-**	68.67	3.13	48.00	2.73	20.67	**22.24	**0.96	**0.96	**0.96
All Court-Footwork-Agility Test (Shuttlecock shooter machine)	1.13	0.763-**	0.874-**	68.25	3.73	47.25	3.02	21.00	**19.57	**0.95	**0.94	**0.95

t table value at level 0.05= 2.02 / r at level 0.05= 0.217

Tab. 2 refers to the experts' agreement on the suitability of agility tests in content - logical validity. The average of their opinions (1.15: 138). This is reflected into the significance of correlation between the applied tests, the critical test "T drill test" which is chosen among several measurement tests as it's near motor tasks and the nature of

performance in the suggested tests forward, backward, sideward and chasse. The correlation coefficients refer to the criteria related validity. The results of comparison among juniors (skilled or unskilled juniors) refer to significant differences among the average of applied tests between the two groups reflected in the rise of Eta coefficient to express validity in the applied tests among different levels for badminton agility juniors.

Tittlbach et al (2004) sees that the Method of measurement choice should consider principles the test measures one Ability accurately and in a validity way. In addition, it should be as quick as possible and economical (58: 72). According to Bös (1987), it's difficult to achieve. Marei (2009) & Carl (1984) agree that there isn't a thermometer accurate test; there are also some troubles in its structure or application. They assure that there's a great difficulty to achieve an accurate scientific measure by which development can be diagnosed in physical performance or the complex athletic performance for training applications (39: 59). Hartmann (2002) ensures that a lot of measuring methods can't achieve scientific calibration and include other great troubles in application (30: 77). On the contrary we ensure that the developed measuring strategy of this research has the validity and specialty, we refer to content-logical validity, criteria related validity in addition to the high significant correlation coefficients in the suggested tests and ground contact time relation which has the greatest accuracy (power system) and reflects the player ability to forward and stop quickly "Quickness" (38), it helps the player to quickly decelerate and accelerate again (12). This is repeated in the application of proposed tests, where deceleration from midcourt to reach the goal then accelerate again quickly, speed movement plays a central role in the results that measure specialty in building tests and reflecting its accuracy in measuring specific agility, Smith (2014) puts a condition for the speed movement that the time of ground contact relation is small (57), Hughes & Fullerton (2001) ensure the importance of the developed tests reflecting skills-physical performance requirements based on the movement pattern

applied in playing or competition, this can determine the validity degree in measuring the sports activity abilities (32). The specific tests applied on participants representing beneficiaries of community sports activity are better than the others from another society; however similar are the two societies (31: 181). Weineck (2007), Grosser et al (1986) ensure that getting short, medium and long-term sports training effectively, it entails accurate determination for the training condition level using suitable measurement methods (62: 47) (27: 12). According to Grosser & Starischka (1986) the agility tests have excellent objectivity and reliability between (0.95: 0.98) coefficient except the All Court-Footwork-Agility Test (Shuttlecock shooter machine) which has a very good coefficient (26: 14), this results reflect a high degree of confidence in tests which make it a measurement method which has validity in application to measure agility of the badminton junior, according to Rockmann & Bömermann (2006) the applied test must have 3 main scientific coefficients: validity, reliability and objectivity (49: 125). This achieve the first and the second hypothesis of the research.

- **The validity of tests application in planning and controlling the specific physical preparation of badminton junior (specific agility) and the differences between the research groups.**

We agree with Abdul Maksoud (1995) that planning training can't start from zero, but it starts from a specific condition the athletes achieved, so we must analyze the current training condition accurately to predict the future training condition level to control the training ideally, then putting instructions as a limitations to choose the content and the suitable training methods which enable the trainer to get the preplanned training condition (3: 73), the difference in athletes levels is determined from the starting point of the current training condition without accurate analysis of the current sports positions there isn't any correct controlling for training and the achievement level, this appeared in the statistical analysis for the experimental research groups results which helped in running a correct controlling patterned program depended on data and current training condition level, and

the controller group which trainers depended on experience and the previous competitions results for athletes without testing and without the current training condition analysis for the physical abilities levels under training (Tab. 3&4) (Charts 11&12), shown to distinguish the experimental group results which applied from the specific agility tests and the development stability of its level according to what expected from the objectives of the future training condition and after the preparation period.

Tab. (3)

Significant differences between the various applications of measurement during the specific preparation period intermediate test

Statistical Analyze / Measures	t value & significant										
	Pre test	Pretest – in-between test 1			Pretest – in-between test 2			Pretest –posttest			Posttest
	Two Groups	Experimental G.	Control G.	t independent	Experimental G.	Control G.	t independent	Experimental G.	Control G.	t independent	t independent
Net-Footwork	0.71	*4.64	*2.49	*3.78	*5.22	*7.37	*4.21	*5.97	*7.18	*4.69	*2.90
Backcourt-Footwork	0.64	*4.42	*3.96	*3.06	*4.91	2.03	*3.60	*5.06	*6.77	*3.67	*2.79
All Court-Footwork	0.58	*5.01	*4.92	*3.95	*5.27	*7.65	*4.37	*5.16	*9.07	*4.30	*2.11
Frontcourt-Footwork-Agility Test (Shuttlecock shooter machine)	0.28	*8.83	*2.80	*2.55	*12.93	1.97	*4.94	*16.13	*3.7*	*5.76	*5.28
All Court-Footwork-Agility Test (Shuttlecock shooter machine)	0.45	13.00*	1.82	*2.19	*11.54	1.59	*3.83	*14.91	*2.71	*4.60	*4.02

t table Experimental Group at level 0.05= 2.16 / t table control Group at level 0.05= 2.20 / t table both Group at level 0.05= 2.06

The results of Tab. (3) refer to equality between the experimental group in which the trainer uses the measure information in planning and controlling specific preparation and the controller group whose trainers depend on experience without regarding the measurement. Before the experiment, the differences between the two groups in the pre measure are insignificant in all applied tests. The differences between the two measurements (pre and in-between test 1) for the controller groups refer to significant differences among the coefficients of all applied tests except the test of (All Court-Footwork-Agility Test (Shuttlecock shooter machine)). While the results

refer to significant differences for the sake of in-between test 2 measurement in all tests in the experimental group which achieve distinction among coefficients comparing to the controller group, the differences are significant for the experimental group and insignificant in (All Court-Footwork-Agility Test (Shuttlecock shooter machine)).

The Tab also refers to significant difference between the two groups for the favor of the experimental group in all applied tests ensured in the post measurement between the two groups for the favor of the experimental group. Which confirms the hypothesis, that the training based on information measurement is more effective than the training based on experience regardless of employment the measurement information in planning and controlling the training process. The differences between the two groups refer to the superiority of experimental research group in all agility tests, which is in coherence with the differences of changeable rates. Tab (4) shows its ratio (6.43%: 20.31%) between the pre measure and the post measure.

Tab. (4

Table (4) Rate and direction of change of two Research Groups within the measurement applications

Statistical Analyze Measures	Changing Rate% & Direction								
	Pretest – in-between test 1			Pretest – in-between test 2			Pretest – Posttest		
	Experimental G.	Control G.	Different	Experimental G.	Control G.	Different	Experimental G.	Control G.	Different
Net-Footwork-Agility Test	-2.77	-0.28	-2.49	-4.94	-0.59	-4.35	-7.49	-1.06	-6.43
Backcourt-Footwork-Agility Test	-2.35	-0.53	-1.82	-4.72	-0.89	-3.83	-7.47	-1.51	-5.96
All Court-Footwork-Agility Test	-2.26	-0.32	-1.94	-5.14	-0.52	-4.61	-7.11	-0.69	-6.42
Frontcourt-Footwork-Agility Test (Shuttlecock shooter machine)	9.91	4.90	5.01	21.74	8.82	12.91	33.06	12.75	20.31
All Court-Footwork-Agility Test (Shuttlecock shooter machine)	7.98	3.68	4.30	15.34	4.41	10.93	23.93	8.82	15.10

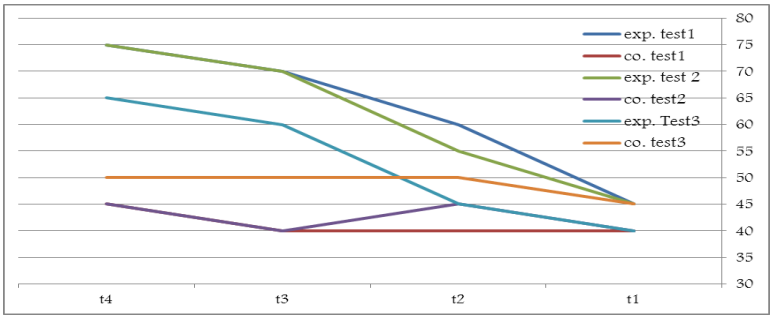


Fig. (11). Development of measuring results of specific agility tests (t1: net footwork, t2: backcourt footwork, t3: all court footwork) among test applications in terms of difference Z-Score

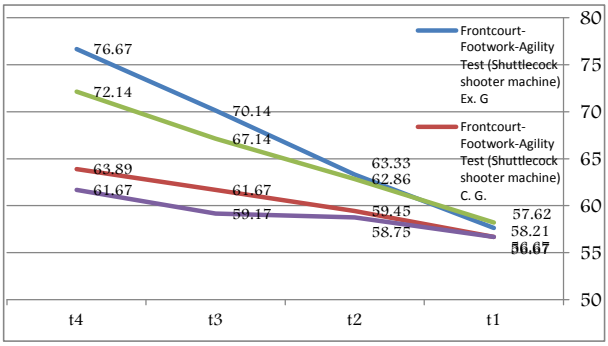


Fig. (12). Development of measuring results of specific agility tests (frontcourt-footwork & All Court-footwork using Shuttlecock shooter machine) among test applications

We can notice stability in the development condition between the measurement and the following one to get the post measurement in the experimental group results; It's shown in charts (10, 11). It shows the happening development in results according to standard levels to be coherent with the planned form in the light of the first training condition before experiment and its objectives after the preparation period depending on the measurement information (standard levels). Regarding identification between the training content and methods applied during the

preparation period between the research groups, the trainers of the experimental group use the research methodology in planning and controlling training according to the measurement information, the trainer can recognize the current training condition for the players especially footwork agility, and determine its objectives from the training stage and the expected achieved results at the end of the stage, to participate in the demanded athletic form before competitions.

We see that the change in specific agility measured by applied tests in the study come naturally basing on skill-physical trainings in the preparation period that affect the growth of agility characteristics for the players in the two groups. We agree with Neumaier (2003) who refers the improvement in results of specific agility measured by time to the improvement of coordination process determined through intramuscularly and the coherence inter muscles groups, which participate in the performance and a noticeable reduction in the activity of the opposite muscle. All these affect the requirements results of the muscular strength during the movement path, so the movement becomes dynamic arranged effective and economic, which means to achieve the goal using the least deal of energy to reduce time factor in the movement program, so it reduces the performance time (45: 53), the skill training participate in the development of the agility ability for juniors which requires the speed movement of the player in all court to shot, return shot and back to the base position in the midcourt as one of the main rules in badminton (22: 9-10) (5: 145).

We assure that the controlling training process using the measure information is the best to get the goals of preparation. This is because it's based on the starting point of the current training condition; it should give meaning for the measured values in pre measuring in comparing with the standard score. This is the most effective factor in the modern sports training, according to the current study reference. Weineck (2007), Grosser et al (1986) ensure the necessity of accurate

determination of training level to get an effective sports training using the measurement methods (62: 47) (27: 12). Abdul Maksoud (1995) sees that the trainer can guess and estimate the level which the athlete can achieve in the next training stage and determine training objectives and planning to achieve it (3: 13). The information about the development path of the training condition has a great role throughout the length analysis for the training plans and wording the future training objectives to regulated the training content and method to succeed the training (24: 25), Martin et al (2001) ensures regulation and following-up have a main merit in the modern sports training systems (40: 29). Depending on the trainer's experience and his personal evaluation for players in the training field as a tool to modify the training process without using accurate information methodology can harm the training condition. Grosser & Neumaier (1988) origin the economical principle, according to their interest in physical and sports performance follow-up. It gave the chance to measure the training condition level of the athlete, so the training becomes economical to be more suitable. The sports training becomes the best with the origin of scientific method (24: 23). This method is considered to be the most confidence in stability of training results, it cares of the real application of the sports training concept (47: 81), considering it a planned and directed process for the development training condition to achieve the planned objectives (51: 62).Neumann et al (2001) ensures mixing information of the training analysis with the measurement results together to show it statistically enables to follow the gaps among planned objectives and the current training condition (46: 91). The chart of the development through the planning gives the trainer a good impression of his success in training management, when curves come together with planned objectives of the plan. We see that achieving success exceeds the trainer's experience to his trusted information about the training condition of his players throughout his follow-up the repetition of measurement application

regularly, refers to recognizing the deviation of the training condition in the training stage. We can get a comparison between the current level and the productive level using the repetition in measurement every 2:3 weeks during training, the trainer makes needed correction procedures in the training process (7: 12). These modifications are sometimes the object of training itself (17: 37). Delp (2006) considers the modification a fatal factor in the training success, the trainer manages to connect the training results with the current training condition level for the athletes then comparing them with the pre training condition (17: 37). Although the accuracy of training plan, it isn't more than anticipation, so we should follow-up that planning (3: 13). Grosser et al 2004 sees its effective in all training units through several methods such as observation, tests and measurements. The competition results are considered a regulation employment using the performance analysis (25: 39), to ensure its suitability or modifying it "Making corrections in training path: Objectives, planning and procedures of training" or " Keeping the path" (3: 13, 60) (25: 39). The trainer can also verify in the training plan (62: 48). In our opinion, it depends on the trainer's awareness of the employment measure in planning and controlling the training, which ensure the validity of the third hypothesis of the research.

Conclusions & Recommendations

- The proposed tests to measure specific agility have confidence for applying in the field of juniors' training that ensured in the high scientific coefficients of validity, reliability and objectivity.
- The standardized level of the proposed agility tests through the juniors measuring results (80) enable the trainers to determine the training condition accurately and recognizing the strength and the weakness points in the training condition, and the possibility of follow-up training condition as well as during the training season.
- Using the measuring information of the applied tests help the trainers with planning and correct controlling for physical preparation for

juniors, where they develop the training objectives (stages and final) during training period starting from the current training condition and following-up the development training condition through the repetition of measure to modify the training (objectives-content-methods).

In the light of the study results and its participants from the badminton juniors, we recommend that:

- The possibility of using the developed tests under studying to diagnose the agility level of footwork movement of the badminton juniors as a measured confidence means.
- The application of the study methodology in planning and controlling for specific preparation for the badminton juniors using the standardized levels in the developed agility tests.
- The badminton juniors' trainers must have the employment methodology of the measure results through the standardized level of the intentioned training abilities in planning and controlling for physical preparation including the procedures of determination objectives, content and methods of training also the follow-up of training during the training season to achieve the aimed development in the training condition.
- The possibility to evaluate the validity of the athlete to participate in the sports competitions based on achieving his form through the measure information and following it up.

Abstract

Sports training faces a global remarkable decline in training based experience compared to training based measure, which enables trainers to achieve sufficiency of training process through planning for general and specific physical preparation, Controlling and following-up training according to suggested objectives. Rooting the use of specific measurement in modern training planning of badminton, the researchers all agree on the importance of the developed tests which reflect the requirements of the skill-physical sports performance based on the movement pattern actually applied in competitions. This determines the validity of the test to measure the specific abilities of sports performance.

Accordingly, the study aims at building and computing the validity of some proposed of specific tests as a base in planning and controlling the specific physical preparation of badminton juniors under 14, which requires: (1) developing a planning methodology for specific preparation of footwork movements for juniors according to the measuring information based on the standardized levels of the measuring tests as a guide for badminton trainers, (2) Studying the effect of suggested methodology application in planning and controlling preparation process for the badminton juniors in training conditions. The study is applied on a random sample of the badminton juniors who are recorded in badminton training centers in Al-Baha and Dammam in Saudi Arabia (80) juniors under 14 years, and the sample characteristics are (age 13.64 ±0.49 years, Height 159.56 ±5.12 cm, Weight 53.84 ±4.72 kg, training age 3.58 ±0.42 years), where it was built and tested the validity of three footwork agility tests (1) on the net, (2) on the backcourt, (3) in all court, in addition to measuring the effective footwork to return shots in random from the shuttlecock shooter machine in front court in 45 sec (4). and in all court in 60 seconds (5) (ratio: 1 shuttlecock/ 3 seconds). There's a survey to root the methodology of the application of the measuring information of the agility developed tests in planning and controlling for specific preparation juniors, which are considered an experimental group included 14 juniors, on the contrary the trainer's experience group, which isn't based on suggested methodology included in planning and controlling the specific preparation process (12 junior) and considered a controller group. The study lasts for 8 weeks applying tests four times (pretest, posttests and in-between tests) applying ratio every 2:3 weeks. The results refer to the confidence of the test of agility footwork movement of juniors, which refers to validity, reliability and objectivity in tests. The employment of measuring information (Standardized Score) in tests recognizes the strength and the weakness points in the training condition, also following of training condition during the training

season, , in addition to correct planning and controlling the physical preparation for juniors, which enable trainers to put the training objectives (stage & final) through training period from the current condition, and follow its development up using repetition on the measurement application to modify the training objectives, content and methods to ensure stability. That was confirmed by the condition stability in the direction of the results of the tests applied in parallel with the direction of the training objectives of the experimental group versus volatility in the results of the controller group, as reflected in the significant differences between the two groups of search in favor of the experimental group in in-between tests (1, 2), as well as a posttest. The study recommends the importance of having the juniors' badminton trainers employment methodology of results through the standardized levels of the aimed abilities, in planning and controlling physical preparation including the procedures, which determine that training objectives, content and methods to follow the training process up through the training season to achieve the development of training condition.

Key Words:

Planning, Controlling, Specific Physical Preparation, Specific Agility Tests, juniors' badminton

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