Effect of Online Training amidst Covid-19 Pandemic on Maintaining Physical and Technical Level for Junior Female Basketball Players

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Abstract:

The world faces Covid-19 pandemic that spread to many countries around the globe. It was declared by the World Health Organization as an international health emergency requiring isolation at home and social distancing, the thing that forced players to abruptly stop their training routines at courts leading to a decline in their physical and technical performance. This study aims at identifying the effect of the online training amidst Covid-19 pandemic on maintaining the physical and technical level for junior female basketball players, using the experimental approach for two groups of female junior basketball players under 9 years old, at Wadi Degla Club – Maadi, Egypt.

The online training program including technical and physical exercises was applied at home for the experimental group (n=10) for (14) weeks, the duration of courts closure due to Covid-19 pandemic, using Zoom and WhatsApp applications. Whereas the control group (n=10) has completely stopped training during the courts closure period. The tests used for pre and post measurements were: Alternate Hand Wall Toss Test, Pushing Medicine Ball "2kg", Standing Board Jump Test, 20-m Sprint Test, Illinois Agility Test, Shooting at Overlapping Rectangles Test, 800-m Run Test, Free Throw test, Layup Test "left and right", and Compound Technical Test. The most prominent results were, the existence of statistically significant differences between experimental and control groups in basketball physical fitness elements, except for agility and cardiorespiratory endurance elements in favor of post measurement for the experimental group. Furthermore, there are statistically significant differences between both experimental and control groups in the technical level, except for free throw skill in favor of the post measurement for the experimental group. Subsequently, it is possible to conclude that the online training amidst Covid-19 pandemic has a potent effect on maintaining the physical and technical level for junior female basketball players.

Key Words: Covid-19, online training, detraining, continuous training, maintaining sports performance.

1 Introduction:

The Acute Respiratory Distress Syndrome (ARDS) resulting from Corona Virus 2 (SARS – CoV-2 or Covid-19), affects the world since its record in December 2019 in Wuhan, China (Gelen et al., 2020). With its rapid spread across the world (World Health Organization [WHO], 2020a), the World Health Organization (WHO) declared Covid-19 as a pandemic in March 11th, 2020 which led to the confusion and paralysis of people's everyday lives (Haleem et al., 2020; WHO, 2020b).

According to WHO recommendations, the governments imposed social distancing, curfew, and home isolation, as well as air travel ban, schools, universities, malls, restaurants, coffee shops, sports and social clubs closure in an attempt to control spreading the virus (Mattioli et al., 2020; WHO, 2020a; World Health Organization Regional Office for Africa [WHO Africa], 2020), leading to negative and devastating ramifications on all sectors (Haleem et al., 2020).

Sports sector was not excluded from the virus consequences, as many local, international, and global events were postponed and even cancelled, such as 2020 Summer Olympics in Tokyo, NBA, Wimbledon, British Open 2020, and other championship. Consequently, players of

different ages and sports completely stopped practicing and training (Gelen et al., 2020; Sraff & Wire Reports, 2020).

As Basketball players stop training for a while, their physical fitness decrease along with the level of adequacy of motor skill, in addition to the increase of fat mass percentage, and developing various diseases such as cardiovascular disease, atherosclerosis, diabetes, and respiratory system diseases (Al-Tikriti & Al-Hajjar, 2012; Eirale et al., 2020; Mattioli et al., 2020; Saleh, 2019). The longer players stop training, the more their physical fitness decreases and the probability of developing chronic diseases increases (Al-Tikriti & Al-Hajjar, 2012). This appears particularly in junior players considering the short period they already practiced the game, resulting in their physical and technical performance decrease in a short period, compared to older players who practiced the game for many years (Al-Tikriti & Al-Hajjar, 2012; Saleh, 2019).

Maintaining and developing their physical and technical performance level, the basketball junior players need to keep up their regular training fitting to their physical and technical abilities, and consistent with their growth level and age characteristics (Al-Hajj, 2017). Persistent and regular training is the way to success and one of the essential pillars to ensure the achievement of high standards (Albasiti, 1998; Barth & Boesing, 2010)

Regular continuous effective training means performing the training quota regulated before the declining of the previous training one, to ensure that the effect of positive training takes place and achieves stability in the adjustment process, thus guarantee load adaptation, maintain physical and technical level, and elevate organic and functional level of junior players (Albasiti, 1998).

To keep the training level for junior basketball players in a good level and prevent the decline of their physiological abilities, it is essential to avoid detraining. For the coaches, they should take into account the right relationship of load components during its formation, and not to increase training quota until making sure of reaching the adaptation stage (Albasiti, 1998). Maintaining physical and technical level mainly depends on organizing training units in terms of their intensity, duration, and repetition during the annual training program, and from year to year (Al-Tikriti & Al-Hajjar, 2012).

With the emergence of this problem among the junior basketball female players, and by reviewing various researches addressing Covid-19 pandemic effect on psychological, physical, and mental health, it was recommended to find alternative training methods to continue training the players and practicing sports in order to reduce the effect of abrupt stopping resulting from the pandemic (Eirale et al., 2020; Mattioli et al., 2020; Wang et al., 2020).

As the author is a basketball coach for juniors, she is motivated to search for another way to continue the training process so as to limit the potential effect of detraining on the junior players' physical and technical level. This method should include preventative measures in terms of using tools individually, applying social distancing, preventing direct connection between players or between players and coach, and the continuous interaction between the players and coach and the players with each other. The researcher came up with the idea of training at home via the internet, just as what happened with home schooling; the idea of a comfortable and flexible communication via the Internet to access learning resources depending on interacting with the

content, the teacher, and other students. It is a new social process that started as a complete alternative to both distance learning and traditional face-to-face classes, so that students can obtain knowledge to build understanding and personal growth (Ally, 2008; Hiltz & Turoff, 2005; Moore et al., 2011).

From this aspect the idea was born, just as there is online learning, there will be online training as one of the alternative methods allowing geographical distancing for players, and in the same time keeping continuous connection. Either directly through audio and video using group video calls applications, or indirectly without contacting the coach, by having the players download the required program they need to work upon. Thus, the players train and send videos for their exercises while the coach gives her feedback using group chat applications. A physical technical training program was prepared for basketball juniors suitable to be implemented directly at home through group video calls applications, and indirectly using group chat applications. The program includes all the elements of physical fitness and skills to be acquired and maintained for this age group. This, to the researcher's knowledge, is considered a new idea that may solve such a problem.

This study aims at defining the effect of online training amidst Covid-19 pandemic on maintaining the physical and technical level for junior female basketball players.

2 Hypothesis:

(1) There are statistically significant differences between the experimental group (applying online training during the courts closure) and control group (not training during courts closure) amidst Covid-19 pandemic on maintaining physical level of junior female basketball players in favor of post measurement for the experimental group.

(2) There are statistically significant differences between the experimental group (applying online training during the courts closure) and control group (not training during courts closure) amidst Covid-19 pandemic on maintaining technical level of junior female basketball players in favor of post measurement for the experimental group.

3 Methods:

3.1 Approach

The study based on an experimental approach for two groups, one is experimental and the other is control, through pre and post measurement.

3.2 Sample

A deliberate sample was chosen from junior female players at Wadi Degla Club – Maadi, Egypt under 9 years old, who registered in the Egyptian Basketball Federation for the season 2019/2020 and received at least eight months of basketball training. The sample is composed of (25) female players, they were deliberately distributed into (10) players for the experimental group (Mean: ± SD : age: 8.68 ± 0.37 years; training age: 1.12 ± 0.34 years; weight: 31.50 ± 3.14 kg; height: 1.39 ± 0.05 cm), and (10) players for the control group (Mean: ± SD: age: 8.61 ± 0.38 years; training age: 1.16 ± 0.31 years; weight: 30.20 ± 3.33 kg; height: 1.40 ± 0.07 cm), and (5) female players for the pilot study.

Note 1: The moderation of the sample distribution under the normal curve was confirmed in the variables of height, weight, age and training age, so the values of the skewness coefficient were between (+0.49, -0.41). The physical variables for basketball, the values of the skewness

coefficient were between (+0.35, - 0.82). The technical variables prepared by specialists for this age group, the values of the skewness coefficient were between (+1.08, -0.01); It is clear that the values of the skewness coefficient are limited to (± 3), indicating the moderation of the sample's distribution in all the research variables.

Note 2: The conformity of the two experimental research groups to the control group was confirmed, as it was found that the P value > 0.05, ensuring that there are no statistically significant differences between the two groups and that they are equivalent.

3.3 Procedures

- The physical tests used are, (Alternate Hand Wall Toss Test) measuring hands coordination, (pushing a medicine ball "2 kg" test with one hand) measuring right and left arms power, (Standing Board Jump Test) measuring the legs power, (20-m Sprint Test) measuring speed, (Illinois Agility Test) measuring agility, (Shooting at Overlapping Rectangles Test) measuring right and left arms accuracy, (800-m Run Test) measuring cardiorespiratory endurance. Technical tests designed for this age group were applied by basketball professionals under the supervision of the Competitions Committee of the Egyptian Basketball Federation are (free throw test, layup test "left and right", compound technical test), including the following skills (dribble, behind, between, crossover, stopping, passing, receiving, layup, jump shot), however all skills are performed with both right and left hands. Physical and Technical tests described briefly as follows:

Alternate Hand Wall Toss Test

The player is standing 2 meters from the wall, holding one tennis ball in her favorite hand, she then tosses the ball with the preferred hand from the bottom towards the wall and receives with the other hand; the ball is tossed with the other hand and received by preferred hand. The performance continues in this way for 30 seconds and the player scores the number of times the ball is caught in this period.

Pushing a medicine ball "2 kg" test with one hand

The player stands behind the starting line, puts the medical ball 2 kg on one hand and then pushes the ball once so that it does not cross the starting line with the right hand and with the left hand once, the distance is recorded from the nearest point of medicine ball landing towards the starting line.

Standing Board Jump Test

The player stands behind the starting line, feet slightly apart; the player jumps in front of the farthest possible distance. The distance is recorded from the nearest point of the player's legs landing towards the starting line.

20-m Sprint Test

The player stands in the high starting position, directly behind the starting line, after hearing the whistle. She runs at full speed to the finish line, which is 20 meters away. The time for each player is recorded to the nearest 1/10 of a second.

Illinois Agility Test

The player stands in the high starting position, directly behind the starting line, and when the whistle is heard, she runs at full speed following the arrow as shown in Figure 1 from the starting

point to the finish point. The time for each player is recorded to the nearest 1/10 of a second.

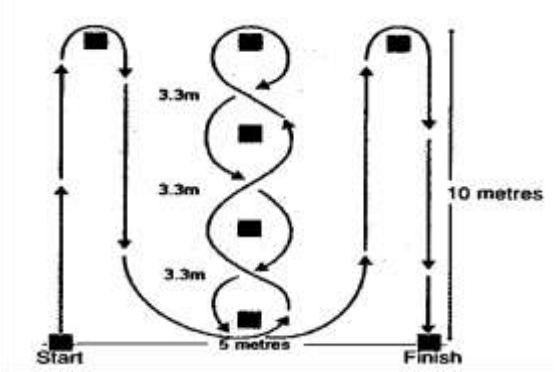

Figure 1. Illinois Agility Test

Shooting at Overlapping Rectangles Test

The player stands in front of the wall painted by the overlapping rectangles and behind the starting line, which is 5 meters away, holding a tennis ball in her hand. She shoots five times at overlapping rectangles in an attempt to hit the inner rectangle. The player has the right to use either hand when shooting. The scores recorded three points when hitting the inner rectangle, two points when hitting the middle rectangle, one point when hitting the outer rectangle, and zero points when touching the tennis ball outside the three rectangles as in Figure 2.

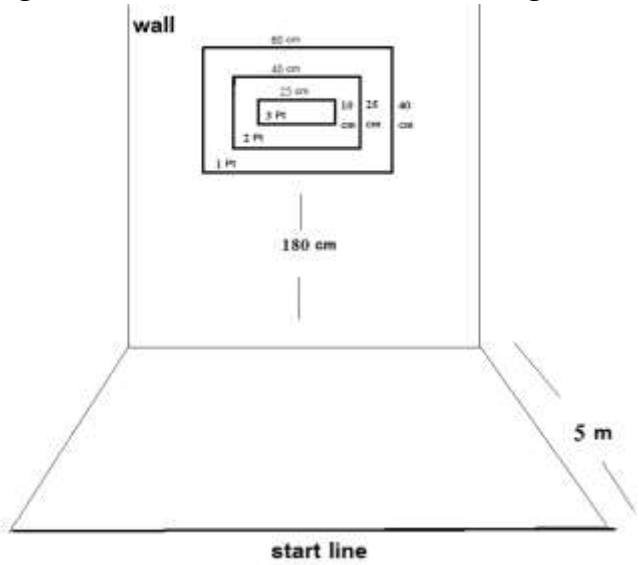

Figure 2. Shooting at Overlapping Rectangles Test

800-m Run Test

The player stands behind the starting line in the high start position, and upon hearing the whistle, she runs two laps around the 400-meters running track until she reaches the finish line. The time for each player is recorded.

Free throw test
The player stands behind the line 3.5 meters away and holding a basketball size 5, she shoots two consecutive free throws in the hoop, which is 2.60 meters from the ground. Successful free throws are recorded for each player.

Layup test
The team stands on the center line of the basketball court and the first player starts when she hears the whistle to perform layup shot on the 2.60 meters high hoop using a size 5 basketball, and when she crosses the 3 points shooting arc, her teammate begins; The performance lasts 3 minutes for layup with the right hand and 3 minutes for layup with the left hand. The number of successful layup shots for the team (right hand - left hand) are recorded and canceled any shot with an error in the steps- hand or a legal violation.

Compound technical test
The player stands behind the starting line holding a basketball size 5, and when she hears the whistle, she dribbles with the left hand in the direction of the first cone to do behind back with left hand; between with right hand at the second cone; crossover with left hand at the third cone; stopping jump stop at fourth cone; passing chest pass to the teammate then run without the ball; receiving the ball at fifth cone; right layup; jump shot with left hand; then do all this skills again from other side of basketball court with the opposite hand to the first performance of each skills, as in Figure 3.

The final score of the test is of 200 points divided by 20 points for the left and right dribbling, 20 points for left and right behind back, 20 points for left and right between, 20 points for left and right crossover, 20 points for left and right jump stop, 20 points for left and right pass, 20 points for left and right receiving, 20 points for left and right layups, 40 points for left and right jump shots. Each skill evaluated on two criteria: looking up and controlling the ball.

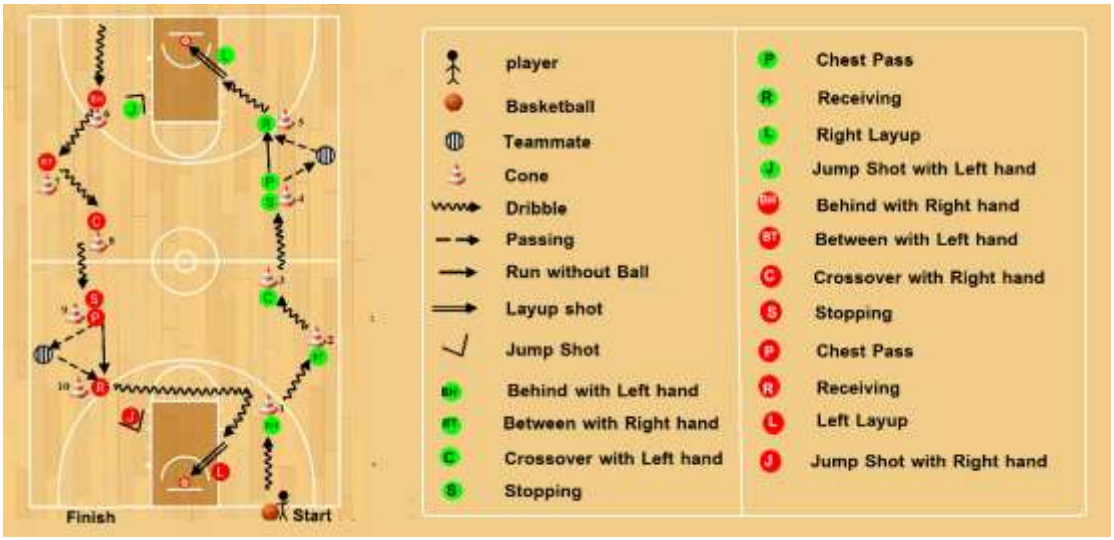

Figure 3. Compound technical test

- The validity of all physical tests are confirmed (Abdulhamid & Hassanein, 1997; Allawi & Radwan, 2001; Al-Tikriti & Al-Hajjar, 2012; Barth & Boesing, 2010; Gambetta, 2007), also

the technical tests (Egyptian basketball federation, 2020) applied in the research using the content validity through scanning scientific references. Also, the reliability of the tests were confirmed through Test-Retest with a time interval of (14) days between the first and second application on a sample chosen randomly from the research community and outside the research sample of (5) players "pilot sample".

- A first pilot study was conducted on February 19th and 20th,2020, aiming at identifying the extent of the physical and technical tests compatibility with reality, and their suitability for this age group. The pilot experiment showed that all the applied tests, either physical or technical, are valid and appropriate for the age group.
- A second pilot study was conducted on March 14th and 15th, 2020, aiming at identifying the possibility of applying online training for this age group, determining which amount of time is more appropriate online, is it (30) minutes or (60) or more? Should online training take place directly through group video calls or indirectly through group chat? Should training be on daily basis, i.e. six times a week or three times are sufficient? How suitable are physical and technical exercises prepared and designed to be applied at home in a small space in terms of actual reality? In addition to the problems and obstacles that may occur during the implementation of training units and finding appropriate solutions to them. The pilot experiment showed the following:
  - It is possible to provide online training for this age group, as they know how to use the applications used in the research.
  - The online training unit should be 60 minutes and not 30, so that the unit includes both the physical and technical parts, and the junior players manage to implement them. This agrees with what WHO indicated for this age group, that the physical activity practiced for this age group is of a period of 60 minutes (WHO, 2010).
  - It is better to provide online training directly through group video calls three times a week using (Zoom) application, and indirectly through group chat applications three times a week using (WhatsApp group), in order to overcome internet connection problems that may occur during online video calls for some players, thus they won't obtain their full training with high efficiency. Therefore, it is better to diversify the use of the online training methods (direct and indirect) to achieve the highest benefit from the training, therefore six times a week. This is consistent with what the WHO indicated, that it is better for this age group to perform daily physical activity to achieve higher benefit and reduce the effects of detraining on their physical, mental and psychological health (WHO, 2010).
  - The exercises prepared and designed by the researcher to be applied at home are appropriate, in terms of implementation. They also added suspense, enjoyment, and challenge elements for female basketball juniors.
- Pre measurements (technical - physical) were applied on junior female basketball players, the experimental and control research group, before implementing the online training program on March 7th and 8th, 2020. Post measurements (technical – physical) were applied on female junior basketball players, the experimental and control research group, after finishing the online training program implementation for the experimental group that lasted for three months and a half, on July 4th and 5th, 2020. It was taken into account that the players do not participate in the training 24 hours prior to the tests. Warm ups were performed before the tests. The test always started at 4 p.m.
- All tests took place in basketball courts at Wadi Degla Club – Maadi branch, Egypt.

3.4 Training Program

- The suggested online training program was applied on the experimental group during the stopping period of training in courts due to Covid-19 pandemic in the supplementary preparation period for the second preparation period of the training season after canceling the second half of the season competitions. The program's implementation took three months and a half, i.e. (14) weeks, (6) training units per week, divided into (3) online training units directly using group video calls application (Zoom), and (3) online training units indirectly using group chat application (WhatsApp). The training unit duration was (60) minutes, with the total of (5040) minutes, from March 16th, 2020 to June 30th, 2020. It included a collection of exercises for basketball physical fitness elements and the chosen and proper skills for this age group, prepared and designed for home in small spaces, and eligible to be applied via the internet, as shown in tables 1 and 2. The control group did not perform any physical or technical activity during the stopping period at clubs and courts closure due to Covid-19 pandemic.

Note 1: the online training program for the experimental group included teaching, learning, and developing only the physical and technical aspects, excluding the tactical aspect, as this age group in the basketball scientific references (the research group) is at the end of the fundamental learning stage and the beginning of the learning for training stage (Saleh, 2019). Therefore, this age group is only allowed to obtain some physical abilities and skills appropriate for its age, excluding addressing the tactical aspect (AlFaith, 2014; American sport Education program, 2007; Khuraibet & Abdel Fattah, 2016; Saleh, 2019).

- Implementing the training program for junior female basketball players (experimental group) at home through online training.
- Using low intensity interval training method, ranging between (60:80 %) and high intensity interval training method, ranging between (80:90 %), so that in the program medium, less than maximum, and maximum loads are used. The weekly load cycle used is (1:3), as it is the most appropriate for juniors (Saleh, 2019).
- Defining the percentage for each training contents (physical preparation – technical preparation) over the months of the annual training season with the individual competition system, "as competitions for the second half of the training season were canceled due to Covid-19 pandemic, so the season was modified to individual competition system", befitting this age group, under 9 years old (the research group), according to the scientific references specialized in the field of sports training. The numbers' ratios for the months in which the detraining occurred due to the Covid-19 pandemic from mid-March to the end of June were calculated, which is the same period the online training program was applied for the experimental group. Physical preparation percentage was (40%) and technical preparation was (60%) in both March and April. Physical preparation percentage was (25%) and technical preparation was (75%) in both May and June (Albasiti, 1998).
- Warm up duration is (10) minutes and cool down duration is (5) minutes, according to scientific references specialized in basketball and sports training (Albasiti, 1998; American sport Education program, 2007; Radwan, 2017).

Table 1
Basketball Physical Elements and Exercises used for it in the Online Training Program for the Experimental Group

Physical Fitness Component					
Fitness	Drills	Reps	Fitness	Drills	Reps
Coordination	-Juggle 1 ball -Juggle 2 balls -Juggle 2 balls exchange -1 Balloon Tossing -2 Balloons Tossing -3 Balloons Tossing -Wall ball bounce -Floor ball bounce	Times per week: 3 Intensity: 80-90% Reps: 10 Sets: 3- 4 Rest: 60-90 secs	Agility	-Zigzag 3 bottles -Zigzag front and back 3 bottles -Line jump -Around the bottle -Hip switch -Shuffle stick -In In, Out Out -Single- leg linear	Times per week:3 Intensity: 90-100% Reps: 6-10 Sets: 3 Rest: 60-90 secs
Speed*	-Response drill distance two steps to the left and same to the right -Different Starts and run for five steps -Run with stand on the wall -3 color bottles reaction drill distance five steps	Times per week: 3 Intensity: 100% Reps: 1 Sets: 3-5 Rest: 60-90 secs	Accuracy	-Target practice with tennis ball on two small papers at the wall -Target practice with tennis ball on three triangles drawn on chart paper Note: these drills done from small distance then the distance increases, and also the length of the paper at wall increases also by training units	Times per week:3 Intensity: 80-90% Reps: 10 Sets: 3- 4 Rest: 60-90 secs
Hand power	-Push ups -Cat walk -Overhead triceps extension with band -One arm overhead triceps extension with band -Bicep curl with band -Lateral raise with band -One arm lateral raise with band -Chest fly with band	Times per week: 2 Intensity: 60- 75% Reps: 8-10 or 30 sec. Sets: 1-2 Rest: 1-2 mins	Legs power	-Wall squat -Lunge -Walking lunge -Vertical jump squat -Frog squat -Lateral bounds -Tuck jump -Wall calf rising -Single leg wall calf rising	Times per week: 2 Intensity: 60-75% Reps: 8-10 or 30 sec. Sets: 1-2 Rest: 1-2 mins.
Cardiorespiratory Endurance	-Jumping rope -Jumping jacks -Run and jump in place -Burpees	Times per week: 2 Intensity: 60- 80% Reps: 120 sec. Sets: 3-6 Rest: 1-2 mins			

***Note:** (*) perform reaction and response speed exercises instead of transition speed exercises, as they are more suitable to apply at home.*

Table 2
Skills and Exercises used for it in the Online Training Program for the Experimental Group

Technical Component			
Skills	Drills	Skills	Drills
Ball handling	-Rotate basketball around head, chest, legs from stability and movement. -Figure 8 between legs.	Passing	- Chest pass on the wall - Bounce pass on the wall - Overhead pass on the wall -Join passing with one or two skills, before or after it. Note: the performance passing from a distance of two steps and then gradually increase the distance up to 4 steps
Ball handling in Dribble with its types	-Ball handling in dribble with tennis ball. -Ball handling in dribble with two tennis balls. -Ball handling in dribble with basketball. -Ball handling in dribble using basketball with tossing one balloon. -Ball handling in dribble using basketball with tossing two balloons. -Ball handling in dribble using basketball while putting covering the eyes. -Ball handling in dribble using basketball with tennis ball juggle. -Zigzag dribble -Join dribble skill with one or two skills, before or after it. Note: All drills are performed from stability and movement. All types of dribble are used in every exercise.	Defense skills	- Run two steps and do stance front chair - Defense feet works in different directions - Defense against dribbler with using chair. - Defense against passer with using chair. - Defense against shooter with using chair. Note: In all skills, emphasize on the correct defense position.
Offense Feet works	- Drills for stopping one and two counts - Fake front chair - Join skill with one or two skills, before or after it.	Shooting	- Free throw on small rectangle at the wall from one step : 5 steps - Layup from left and right side, shooting on rectangle at the wall - Jump shot on small rectangle at the wall from one step up to 5 steps. - Join skill with one or two skills, before or after it except free throw skill.

***Note:** Intensity: 60- 80%, Reps: 8-10, Sets: 3-4, Rest: 1-2 min.*

3.5 Statistical Analysis

IBM SPSS, version (24), was used to conduct the research statistical processing. Prior to this, the normality of the research sample was checked using Shapiro-Wilk test to determine parametric or nonparametric statistic usage, (significance level is P-value) for the research sample "experimental and control" in the variations of "height, weight, age, training age, coordination, right arm power, left arm power, the legs power, speed, agility, right arm accuracy, left arm accuracy, cardiorespiratory endurance, right layup, left layup, free throw, compound technical variable" = (0.22, 0.34, 0.00, 0.00, 0.06, 0.07, 0.34, 0.06, 0.16, 0.21, 0.13, 0.00, 0.02, 0.00, 0.00, 0.00, 0.08). Hence, it was perceived that P-value sig. > 0.05 in most variables, meaning using parametric statistic "Independent Samples T-Test" to calculate the differences between the experimental and control groups, and "Paired Samples T-Test" to calculate the differences between pre and post measurement for any experimental and control groups.

4 Results:

1- Physical level for junior female basketball players:

Table 3
Means, Standard Deviations, "t – test" and percentage of the change in the physical variables for the experimental group (n=10)

Physical Variables (Units)	Pre-measurement		Post-measurement		Mean differences	t	P	%
	M	SD	M	SD				
Coordination (n/ 30s)	10.00	3.92	14.00	5.12	-4.00	-2.44	0.04*	40%
Right Arm power (m)	2.97	0.46	2.86	0.40	0.11	0.54	0.60	-
Left Arm power (m)	2.41	0.55	2.83	0.28	-0.42	-2.07	0.07	-
Legs power (m)	1.27	0.16	1.36	0.20	-0.09	-2.43	0.04*	7.09%
Speed (s)	6.13	0.65	5.16	0.47	0.97	5.76	0.00*	15.82%
Agility (s)	22.52	1.53	23.14	1.75	-0.62	-3.55	0.01*	2.75%
Right Arm accuracy (Pt)	7.90	5.09	7.50	4.62	0.40	0.23	0.82	-
Left Arm accuracy (Pt)	2.60	2.07	2.80	2.86	-0.20	-0.26	0.80	-
cardiorespiratory endurance (min)	6.24	0.71	6.28	0.79	-0.04	-0.12	0.91	-

** Significant difference between pre and post measurements p≤0.05*
% = percent change in performance

Table 3 indicates statistically significant differences between the pre and post measurement of the experimental group in the variables (coordination, both legs power, speed, agility). It is clear that (P Value < 0.05), indicating the statistically significant differences in favor of the post measurement of the experimental group in the variable of coordination, legs power, and the speed, and with an improvement rate in the coordination by (40%). Both legs power by (7.09%) and speed by (15.82%). As for the agility variable, it appears that the differences are in favor of the pre measurement of the experimental group, with a decrease in the agility by (2.75%).

Table 3 also indicates that there are non-statistically significant differences between the pre and post measurement of the experimental group in the variables (arms power "right-left", arms accuracy "right-left", and the cardiorespiratory endurance), as it becomes clear that (P value> 0.05) indicating non-statistically significant differences.

Table 4
Means, Standard Deviations, "t – test" and percentage of the change in the physical variables for the control group (n=10)

Physical Variables (Units)	Pre-measurement		Post-measurement		Mean differences	t	P	%
	M	SD	M	SD				
Coordination (n/ 30s)	9.70	4.35	6.20	4.52	3.50	2.95	0.02*	36.08%
Right Arm power (m)	2.80	0.42	2.32	0.48	0.48	3.26	0.01*	17.14%
Left Arm power (m)	2.50	0.81	1.94	0.67	0.56	2.37	0.04*	22.4%
Legs power (m)	1.31	0.16	1.18	0.18	0.13	3.10	0.01*	9.92%
Speed (s)	5.53	0.89	6.20	0.86	-0.67	-2.85	0.02*	12.11%
Agility (s)	22.03	1.04	23.65	1.94	-1.62	-2.65	0.03*	7.35%
Right Arm accuracy (Pt)	6.30	3.30	2.50	2.32	3.80	3.77	0.00*	60.31%
Left Arm accuracy (Pt)	3.20	2.82	0.60	1.26	2.60	3.07	0.01*	81.25%
cardiorespiratory endurance (min)	6.26	0.52	6.61	0.72	-0.35	-2.84	0.02*	5.59%

** Significant difference between pre and post measurements p≤0.05*
% = percent change in performance

Table 4 indicates statistically significant differences between the pre and post measurement of the control group in the variables (coordination, arms power "left – right", legs power, speed, agility, arms accuracy "right- left", cardiorespiratory endurance). It is clear that (P Value < 0.05), indicating statistically significant differences in favor of the pre measurement of the control group with a decrease rate in the variables. The order of magnitude of the decrease in left arm accuracy (81.25%), right arm accuracy (60.31%), coordination (36.08%), left arm power (22.4%), right arm power (17.14%), speed (12.11%), legs power (9.92%), agility (7.35%), cardiorespiratory endurance (5.59%).

Table 5
Means, Standard Deviations and "t – test" in the physical variables for experimental and control groups

Physical Variables (Units)	Experimental group (n=10) Post- measurement		Control group (n=10) Post-measurement		Mean differences	t	P
	M	SD	M	SD			
Coordination (n/ 30s)	14.00	5.12	6.20	4.52	7.80	3.61	0.00*
Right Arm power (m)	2.86	0.40	2.32	0.48	0.54	2.75	0.01*
Left Arm power (m)	2.83	0.28	1.94	0.67	0.89	3.92	0.00*
Legs power (m)	1.36	0.20	1.18	0.18	0.18	2.12	0.05*
Speed (s)	5.16	0.47	6.20	0.86	-1.04	-3.38	0.01*
Agility (s)	23.14	1.75	23.65	1.94	-0.51	-0.61	0.55
Right Arm accuracy (Pt)	7.50	4.62	2.50	2.32	5.00	3.06	0.01*
Left Arm accuracy (Pt)	2.80	2.86	0.60	1.26	2.20	2.22	0.03*
cardiorespiratory endurance (min)	6.28	0.79	6.61	0.72	-0.33	-0.98	0.34

** Significant difference between experimental and control groups p≤0.05*
% = percent change in performance

Table 5 indicates statistically significant differences between both post measurements for the experimental and control group in variables (coordination, arms power "left – right", legs power, speed, arms accuracy "left – right"). It is clear that (P Value ≤ 0.05) indicating statistically significant differences in favor of the post measurement of the experimental group.

Table 5 also indicates non-statistically significant differences between both post measurements for the experimental and control group in variables (agility, cardiorespiratory endurance), as it is clear that (P value > 0.05) indicating a non-statistically significant differences.

2- Technical level for junior female basketball players:

Table 6

Means, Standard Deviations, "t – test" and percentage of the change in the Technical variables for the experimental group (n=10)

Technical Variables (Units)	Pre-measurement		Post-measurement		Mean differences	t	P	%
	M	SD	M	SD				
Right Layup Test (Pt)	1.00	0.67	1.10	0.57	-0.10	-0.56	0.59	-
Left Layup Test (Pt)	0.50	0.85	0.90	0.74	-0.40	-1.81	0.10	-
Free throw Test (Pt)	0.40	0.52	0.10	0.32	0.30	1.96	0.08	-
compound technical Test (total score)	144.60	12.72	163.70	20.07	-19.10	-5.19	0.00*	13.20%

** Significant difference between pre and post measurements p≤0.05*
% = percent change in performance

Table 6 indicates statistically significant differences between the pre and post measurement of the experimental group in the (compound technical variable). It is clear that (P value < 0.05) indicating statistically significant differences in favor of post measurement for experimental group, and with improvement rate in the compound technical variable by (13.20%).

Table 6 also indicates non-statistically significant differences between pre and post measurement for the experimental group in variables (layup "right – left", free throw), as it is clear that (P value > 0.05) indicating non-statistical significant differences.

Table 7

Means, Standard Deviations, "t – test" and percentage of the change in the Technical variables for the control group (n=10)

Technical Variables (Units)	Pre-measurement		Post-measurement		Mean differences	t	P	%
	M	SD	M	SD				
Right Layup Test (Pt)	1.10	0.57	0.40	0.70	0.70	2.69	0.03*	63.63%
Left Layup Test (Pt)	0.70	0.82	0.10	0.32	0.60	2.25	0.05*	85.71%
Free throw Test (Pt)	0.60	0.84	0.00	0.00	0.60	2.25	0.05*	100%
compound technical Test (total score)	148.10	24.14	134.70	31.19	13.40	3.70	0.01*	9.04%

** Significant difference between pre and post measurements p≤0.05*
% = percent change in performance

Table 7 indicates statistically significant differences between the pre and post measurement of the control group in the variables (layup "right – left", free throw, compound technical variable). It is clear that (P value ≤ 0.05) indicating statistically significant differences in favor of pre measurement for the control group, with decrease rate in the variables by organizing the decrease magnitude in the free throw shot by (100%), left layup by (85.71%), right layup by (63.63%), compound technical variable by (9.04%).

Table 8
Means, Standard Deviations and "t – test" in the Technical variables for experimental and control groups

Technical Variables (Units)	Experimental group (n=10) Post- measurement		Control group (n=10) Post-measurement		Mean differences	t	P
	M	SD	M	SD			
Right Layup Test (Pt)	1.10	0.57	0.40	0.70	0.70	2.46	0.02*
Left Layup Test (Pt)	0.90	0.74	0.10	0.32	0.80	3.15	0.01*
Free throw Test (Pt)	0.10	0.32	0.00	0.00	0.10	1.00	0.34
compound technical Test (total score)	163.70	20.07	134.70	31.19	29.00	2.47	0.02*

** Significant difference between experimental and control groups p≤0.05*
% = percent change in performance

Table 8 indicates statistically significant differences between both post measurements of the experimental and control groups in the variables (layup "right – left", compound technical variable). It is clear that (P value < 0.05) indicating statistically significant differences in favor of post measurement for the experimental group.

Table 8 also indicates non-statistically difference between both post measurements for the experimental and control groups in the variable (free throw), as it is clear that (P value > 0.05) indicating non-statistically significant differences.

5 Discussion:

1- Physical level for junior female basketball players:

Tables 3, 4 and 5 conclude that physical level decreases for the control group who didn't exercise during the mandatory detraining period due to Covid-19 pandemic in all basketball physical fitness elements compared to those before stopping. Whereas the experimental group who subjected to online training during the mandatory detraining period has improved in the physical level for coordination, legs power, and speed elements unlike before. The group also kept up the physical level in arms power "left – right" and arms accuracy "right –left" elements, and reduced the decrease in both agility and cardiorespiratory endurance elements.

These results came as the control group did not participate in the physical activity at home for a period of 14 weeks during the mandatory detraining period in courts due to Covid-19 pandemic. This led to low level of physical performance unlike what the group had before stopping, represented in coordination, arms power "left – right", legs power, speed, agility, arms accuracy "left – right" and the cardiorespiratory endurance with a significant decrease percentage, ranging between (5.59%: 81.25%).

These findings are consistent with Ammar et al. (2020) and Maugeri et al. (2020), who indicate that the significant decrease in the physical activity between pre and post Covid-19 in different age groups.

Moreover, Yousif et al. (2019), Joo (2018), Tran et al. (2017), Khudor (2016), Faigenbaum et

al. (2013), and Khaleel (2008) all confirm that stopping and detraining lead to the decrease of fitness elements level. The magnitude of declining varies according to the duration and amount of obtaining the element before detraining.

In this regard, AlFaith (2016) points out that detraining may be caused by studying or other, however this affects negatively the player's physical abilities level.

Al-Tikriti and Al-Hajjar (2012) clarify that detraining for a certain period of time can weaken the physical fitness elements value, and the longer the detraining period the more the player loses physical fitness compared to the first training shape.

These results are attributed to the experimental group for continuing online training from home throughout the mandatory detraining period, which had a positive effect in improving coordination element by 40%, legs power by 7.09%, and speed by 15.82% compared to before training. Also, it helped in keeping physical level that the player obtained before stopping in arms power "right – left", and arms accuracy "right – left" elements, and reducing the decrease in agility and cardiorespiratory endurance elements.

These findings are consistent with Maugeri et al. (2020) recommendations, that keeping regular exercise routine during the mandatory lockdown period, as the current state of emergency, is a major strategy for maintaining physical and mental health.

This is also consistent with the recommendations of Narici et al. (2020) that detraining harmful effects and stopping activities can be reduced and loss rate decreased through practicing routine exercises.

AlFaith (2016) points out that training continuity is considered one of the important factors necessary to ensure the rise in the level of physical attributes or at least maintain the level reached by the player.

This is because the online training program included various exercises for the basketball physical fitness elements suitable for home. These exercises were distributed over the training units taking into account their intensity and duration, so they lasted for (60) minutes, (6) times per week, to fit the same weekly load given to the players before stopping training in courts.
This agrees with the recommendations of Narici et al. (2020) that low to medium magnitude resistance exercises that can be easily performed at home, will have positive effects.

In this regard, Al-Tikriti and Al-Hajjar (2012) indicate, that maintaining what has been acquired of physical fitness and motor level depends mainly on organizing training units from their intensity, duration, and frequency during the annual training program and from year to another.

The reason behind agility decrease for the experimental group lies behind the fact that the players, before stopping their training at courts, used to train on this element three times a week, with exercises that take a large space in the court ranging between 10:15 meters, with a lot of changing directions. This space was not available during online training at home, despite the attempt to diversify the exercises, but they were performed on a small space not exceeding 5

meters and with very limited changes in directions to suit the training requirements at home.

This complies with the conclusion of Saleh (2019), who indicated that developing agility element is affected by place contrast, like distance and direction.

Saleh (2019) also mentioned that one of the factors influencing agility element development and making it more effective is a set of determinants (physical, motor duty, and environmental). He assumed that environmental determinants include the court dimensions, surface, the place for competition and colleagues, temperature, etc.

As for the cardiorespiratory endurance reduction for the experimental group players, despite that the online training program included exercises for its development, especially rope jumping to help preserving endurance ability for both circulatory and respiratory systems. Although these exercises helped reducing the element decrease by a large degree, compared to the control group, which had a significant decrease in this element, yet they did not help stopping the decline, neither helped in maintaining and developing cardiorespiratory endurance, which requires a long period of continuous aerobic performance. However, this cannot be reached through rope jumping and aerobic exercises in the limited space and poor ventilation at home.

This comports with what Hammad (2004) indicated, that rope jumping helps in largely improving cardiorespiratory endurance. However, it is difficult to continue performing jumping movements with a medium rhythm for enough time to build cardiorespiratory endurance, as the player will suffer from rapid leg fatigue, high pulse rates, and loss of enjoyment of the exercise.

Recently, Gelen et al. (2020) indicated that training at home during Covid-19 pandemic makes athletes go through a disturbed time in terms of performance and health. Low load training may affect the player's physical level, and body systems such as the muscular nervous system, cardiovascular system, respiratory or musculoskeletal system, due to requirements such as the training area, training equipment, and training environment.

Through the previous presentation of Tables 3, 4 and 5, it is clear that the first hypothesis has been partially fulfilled.

2- Technical level for junior female basketball players:

Tables 6, 7 and 8 conclude that technical level decrease for the control group that didn't exercise during the mandatory detraining period due to Covid-19 pandemic in layup "right – left", free throw, and compound technical Test, compared to the time before stopping. Whereas the experimental group that applied the online training has improved in the technical level for the compound technical Test. The group also preserved its level in layup "right – left" and reduced the decrease in free throw level.

Such a decrease in the technical level of the control group, which ranged at a significant low rate between (9.04%: 100%), is due to the sudden detraining and their lack of practice of the acquired skills before stopping, which led to a very significant decrease in the technical skills.

These findings agree with Khaleel (2008), indicating that detraining has affected the game's basic skills. The percentage of the basic skills declining rate was close throughout the four weeks.

Moreover, the current results are in agreement with what Mujika and Padilla (2003) who pointed out that the detraining period has a negative effect on the player's technical performance level. This resulted in a partial or complete decrease in the acquired adaptations before stopping, which harmed the sports performance.

The experimental group findings are attributed to its continuity in online training during the mandatory detraining period, which included technical exercises for all learned and acquired skills before stopping. All available resources were used at home, such as using the wall for passing the ball, designing overlapping rectangular paper charts to help in layup shooting "indirect shot" and increase accuracy, using chairs as cones, performing difficult exercises to increase the players' ball control. So all types of dribbling were performed using a tennis ball, and two tennis balls, as well as a basketball with a tennis ball, and a tennis ball with balloon tossing. Also all types of dribbling control exercises using a basketball while covering the eyes. All this helped in improving compound technical Test by (13.20%), including the following skills ball handling during dribble such as (crossover, behind, between), and stopping, passing, receiving, layup, jump shot, however all skills are performed with both right and left hands, and in preserving layup "right – left" and reducing free throw skill decrease.

These findings agree with what Abu Jamil (2015) referred to, that players keep developing in the technical skills or at least preserve it by continuing training and avoid detraining.

Moreover, this comply with what Gelen et al. (2020) referred to, that amidst Covid-19 pandemic it is not possible for all athletes to presume their usual training program in courts, being in a mandatory home isolation following the government's regulations. That is why the coach has to set a training plan as befitting these circumstances to reduce the huge impact of detraining on the players' physical, technical, and mental states. Training has positive effects on energy regeneration system, improving coordination and the technical, tactical, mental and psychological characteristics of the athlete.

Online training offered the experimental group a chance to continually connect with the coach using video calls application such as Zoom and group chat application such as WhatsApp group. This helped the players learn about the training program and exercise properly in terms of the load magnitude, also receive a feedback and correct and amend their mistakes, which positively affected their technical level.

GELEN et al. (2020) and Jakobsson et al.(2020) point out in this regard, that athletes training at home during COVID-19 pandemic should be planned through connecting them with sports coach or strength and conditioning coach, using technology (video calls, e-mails, phones, text messages) to obtain the proper training program.

Although the experimental group used an aiming chart in the form of overlapping rectangles hanged up on the wall, to help in developing shooting skill, yet it did not help in preserving free throw skill and reducing its performance level. For the form and course of the home training according to the resources there, the indirect shooting is totally different from the shape and course of the free throw "direct shot", i.e. the ball in the court is directly shot at the basket, hence the decrease in the performance level.

This is consistent with Fawzy (2004) mentions that one of the factors influencing the free throw accuracy is the shooting point. During free throw training, the ball has to be aimed at the upper edge of the front part of the hoop facing the player "direct shot".

Through the previous presentation of Tables 6, 7 and 8, it is clear that the second hypothesis has been partially fulfilled.

6 Conclusion:

In light of the objectives and hypotheses of the research and the approach used as well as obtained results. It is possible to conclude that the online training program at home, for a period of 14 weeks during detraining resulted from lockdown related to the Covid-19 pandemic, proved to have an effective and positive impact on the physical level of junior female basketball players. Through developing the following physical elements (coordination, speed, and legs power), preserving the following elements (arms power "right –left", arms accuracy "right – left"), and reducing the decline of the following elements (agility and cardiorespiratory endurance). It also has a positive impact on the technical level of junior female basketball players through developing the compound technical level performance, maintaining layup "right – left", and reducing free throw skill decrease to some extent.

It is possible to conclude that the sudden detraining for 14 weeks has a negative effect on the physical and technical level for junior female basketball players, as all basketball physical fitness elements have decreased, in addition to the decrease in the players' technical performance of the learned and acquired skills before stopping.

Online training is recommended to players using video call applications such as Zoom and group chat applications such as WhatsApp. In addition, continuous connection with the coach offer a proper training program and give outstanding opportuning for the trainee to receive follow up and feedback to correct the performance. This is suitable to face any other emergencies like a new wave of COVID-19 pandemic or any other pandemics requiring mandatory home isolation or examinations or even illness or other problems requiring the players to stay at home. It is very important for the players to maintain their physical and technical level and reduce declining in performance.

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