



ΔΗΜΟΚΡΙΤΕΙΟ
ΠΑΝΕΠΙΣΤΗΜΙΟ
ΘΡΑΚΗΣ

DEMOCRITUS
UNIVERSITY
OF THRACE

Helping Active Lives through
Targeting Healthy Youth



Games with Balance and Improvement of Neuromuscular Control Prevention of Injuries

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Can games help us prevent injuries ????

YES !!!

To achieve this they should have some characteristics:

- ✓ to improve **neuromuscular control and stability**.... by training the balance ability
- ✓ to **strengthen leg** and **core** muscles

Improvement of neuromuscular control and stability



In order to improve neuromuscular control we must understand the **mechanism** by which can be practiced!!

Is practiced when it has to **process information** and **create motor responses** in order to **control the body's position** in space and to avoid falls

The more this mechanism works, the more effective the motor responses are produced (in a quicker time)

The CNS **receives information** about the **position of the body** in the space from various receptors (**proprioceptors**) located in muscles, ligaments, skin. According to these information, CNS **activates** the appropriate **muscles** and generates the appropriate **kinetic responses**

Environment

(skin, joints, muscles, tendons, vision, hearing)



Receptors



Central Nervous System



Kinetic response (muscles)

Improvement of neuromuscular control and stability



To practice this mechanism, information must be transferred to the CNS, in order to produce the appropriate **kinetic responses**

- ✓ this mechanism **does not work** when I **stay still** (even if I'm at one leg) (no corrective action is needed)
- ✓ it **works** when the **center of gravity is removed from the base of support** and I have to control it ... when I go to lose my balance and I have to control it!!
- ✓ works when the CNS has to **activate some muscles to control** or **correct the body position**
- ✓ lower limbs **balance exercises** are appropriate to train this mechanism

Prevention of Injuries



Improving neuromuscular control has been shown to help **reduce lower limb injuries**

Appropriate exercises – balance exercises are often used in injury prevention programs

FIFA 11+ FOR KIDS

**A WARM-UP PROGRAMME
FOR PREVENTING INJURIES IN
CHILDREN'S FOOTBALL**

The types of exercises used in this program can help us to design games with similar content aiming on prevention of injuries

FIFA 11+ FOR KIDS



Developed by a group of international experts for
Kids 7-13 years old

Is a new kind of warm-up program that aims to minimize
the **risk factors** that can cause **injury**.

Consists of 7 exercises. Every exercise has 5 levels of
difficulty (levels 1 to 5).

“FIFA 11+ for Kids” can improve **motor skills**, and, in
particular, **agility, dynamic balance, jumping power** and
technical skills. With its **targeted** exercises the “FIFA 11+
for Kids” can help children avoid injury (Rössler et al.,
2016).

FIFA 11+ FOR KIDS



A major study of over 4,000 children in four countries has proved that the “FIFA 11+ for Kids” can prevent injury: players who used the program suffered 38% fewer injuries than children in the group that used a normal warm-up program (Rössler et al., 2016)

EXERCISE 1
JOG & LOOK AT THE COACH (TO STOP)

- 20-30 seconds
- 20-30 commands
- 20-30 commands
- 20-30 commands

EXERCISE 2
SKATING HOP

- 20-30 hops (5 seconds hop)
- 20-30 hops (5 seconds hop)
- 20-30 hops (5 seconds hop)
- 20-30 hops (5 seconds hop)

EXERCISE 3
ONE LEG STANCE

- 10 right/left and 5 passes per player
- 10 right/left and 5 passes per player
- 10 right/left and 5 passes per player
- 10 right/left and 5 passes per player
- 10 right/left for 20 seconds

EXERCISE 4
PUSH UP

- 20-30 seconds
- 20-30 seconds
- 20-30 seconds

EXERCISE 5
ONE LEG HOPS

- 20-30 hops on right leg and 5 hops on left leg
- 20-30 hops on right leg and 5 hops on left leg
- 20-30 hops on right leg and 5 hops on left leg
- 20-30 hops on right leg and 5 hops on left leg

EXERCISE 6
SPIDERMAN

- 20-30 seconds
- 20-30 seconds
- 20-30 seconds
- 20-30 seconds

EXERCISE 7
ROLL OVER

- 5-7x per side
- 5-7x per side
- 5-7x per side
- 5-7x per side

FIFA 11+ KIDS

FIFA FOR BALL FOR HEALTH F-MARC

FIFA 11+ FOR KIDS



CONTENT AND STRUCTURE

The “FIFA 11+ for Kids” focuses on three key areas of injury prevention:

1

IMPROVING COORDINATION AND BALANCE

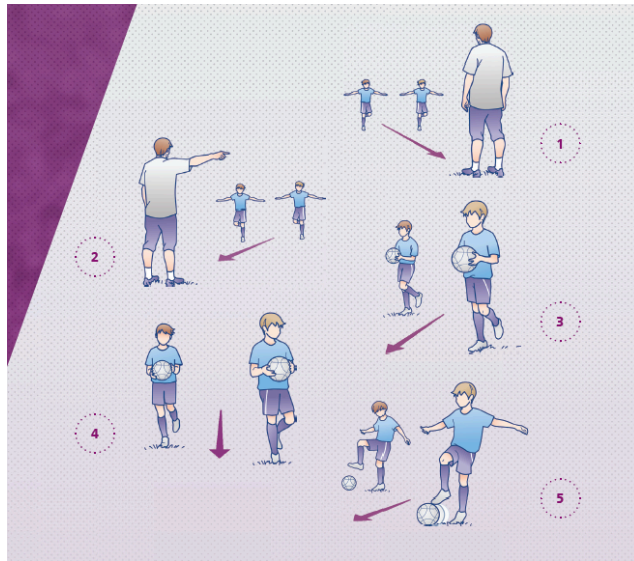
2

STRENGTHENING THE LEG AND CORE MUSCLES

3

OPTIMISING FALLING TECHNIQUES

1st exercise: Alertness Running Game



FOCUS: improving balance and coordination.

STARTING POSITION: the players stand on the goal line, about 2 metres apart. The coach stands just outside the penalty area (distance depends on the players' age).

ACTION: at the coach's command, the players run straight ahead towards the coach. If the coach calls "right" or "left", the players must stand on the right or left leg and maintain their balance for around 3 seconds. They can hop until they find their balance. The knee of the supporting leg should not be fully extended, and the arms can be used for balance. If the player does not stand on one leg at the stop command or the other foot touches the ground within 3 seconds, he/she must jog back to the goal line. The coach then gives the command to run and stop (five times in total per set). All players then jog back to the goal line.

LEVEL 1:
LISTEN FOR THE STOP
COMMAND

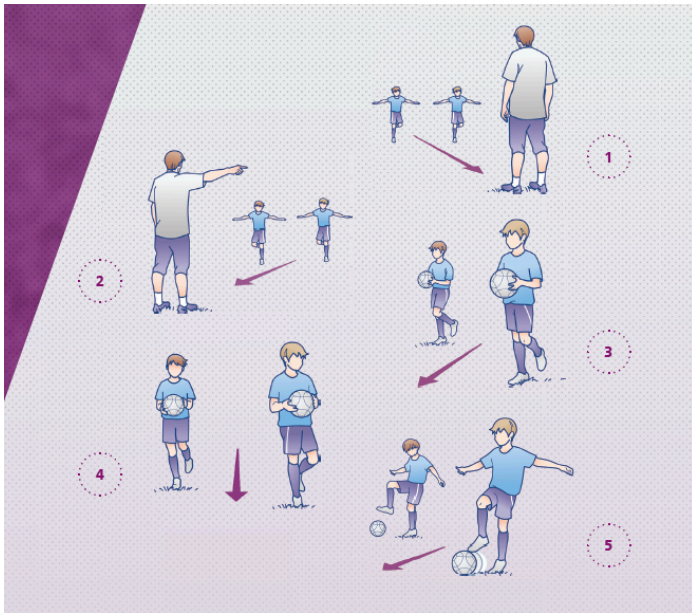
LEVEL 2:
WATCH FOR THE
STOP COMMAND

LEVEL 3:
BALL IN THE HANDS
AND LISTEN FOR THE
STOP COMMAND

LEVEL 4:
BALL IN THE HANDS
AND WATCH FOR THE
STOP COMMAND

LEVEL 5: DRIBBLE WITH THE BALL AND LISTEN
FOR THE STOP COMMAND

1st exercise: Alertness Running Game



STARTING POSITION: the players stand on the goal line, about 2 metres apart. The coach stands just outside the penalty area (distance depends on the players' age).

ACTION: at the coach's command, the players run straight ahead towards the coach. If the coach calls "right" or "left", the players must stand on the right or left leg and maintain their balance for around 3 seconds. They can hop until they find their balance. The knee of the supporting leg should not be fully extended, and the arms can be used for balance. If the player does not stand on one leg at the stop command or the other foot touches the ground within 3 seconds, he/she must jog back to the goal line. The coach then gives the command to run and stop (five times in total per set). All players then jog back to the goal line.

OBJECTIVE: after every command to stop, stand still on one leg for 3 seconds.

INSTRUCTIONS TO THE PLAYERS:
"Run fast, stop, and stand still on one leg until the next command."



THE FOLLOWING ERRORS MUST BE CORRECTED:



Knee inwards and lopsided pelvis



Foot pointing inwards



Foot pointing outwards

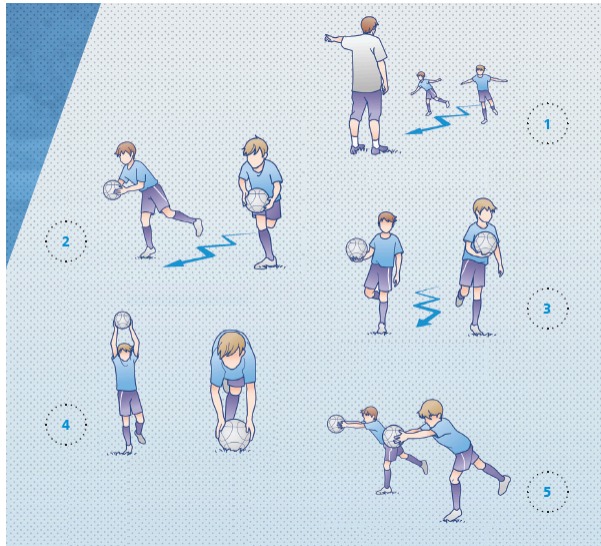


When viewed from the front, the hip, knee and foot should form a straight line.

The knee of the supporting leg should be slightly bent.

Adjust the running distance to the players' age.

2nd exercise: Skating jumps



FOCUS: stability of foot and knee joints.

STARTING POSITION: the players stand on the goal line, about 2 metres apart. The coach tells the players which leg to stand on and makes sure that every player is standing on the correct leg.

ACTION: at the coach's command ("jump!"), the players jump forward on one leg and land on the other leg. The coach indicates the direction in order to avoid collisions. Example: when jumping from the left foot, the player should jump forwards to the right, finding their balance on landing and standing on one leg for 3 seconds. While balancing, the knee of the supporting leg is slightly bent. Balancing with the arms is permitted. The coach then gives the command for the next jump in the other direction. The player should make a clear sideways movement with each jump in order to move forwards in a zigzag. After 5 jumps on each leg, the player returns slowly to the goal line.

LEVEL 1:
LEARNING HOW
TO LAND

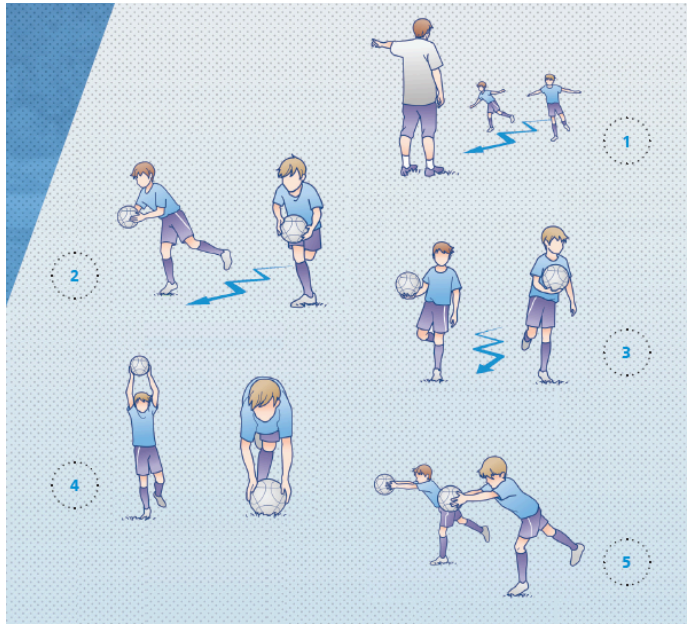
LEVEL 2:
BALL IN BOTH
HANDS

LEVEL 3:
BALANCING WITH
THE BALL IN ONE
HAND

LEVEL 4:
DROPPING THE
BALL ONTO THE
GROUND

LEVEL 5: DYNAMIC BALANCING WITH BALL

2nd exercise: Skating Jumps



INSTRUCTIONS TO THE PLAYERS:

"Jump as far as you can, land safely, and keep your balance until the next jump."

OBJECTIVE: balance after each landing and stand on one leg for 3 seconds

STARTING POSITION: the players stand on the goal line, about 2 metres apart. The coach tells the players which leg to stand on and makes sure that every player is standing on the correct leg.

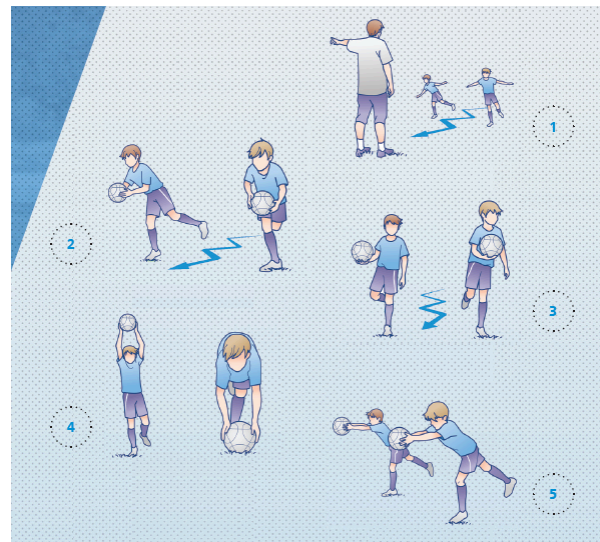
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2nd exercise: Skating Jumps



LEVEL 2: BALL IN BOTH HANDS

STARTING POSITION AND ACTION: as level 1, except that the players hold a ball with both hands.





THE FOLLOWING ERRORS MUST BE CORRECTED:



Knee inwards and lopsided pelvis



Over-bending of the hip, leaning too far forward



Opening of the pelvis, torso leaning to one side



When viewed from the front, the hip, knee and foot of the launching leg are in a straight line.

The hips and the knee of the supporting leg are always slightly bent.

Knee to be bent when landing softly to cushion the impact.

Body tension: the stomach and back muscles should be tensed, with the back straight and the head extending the spine.

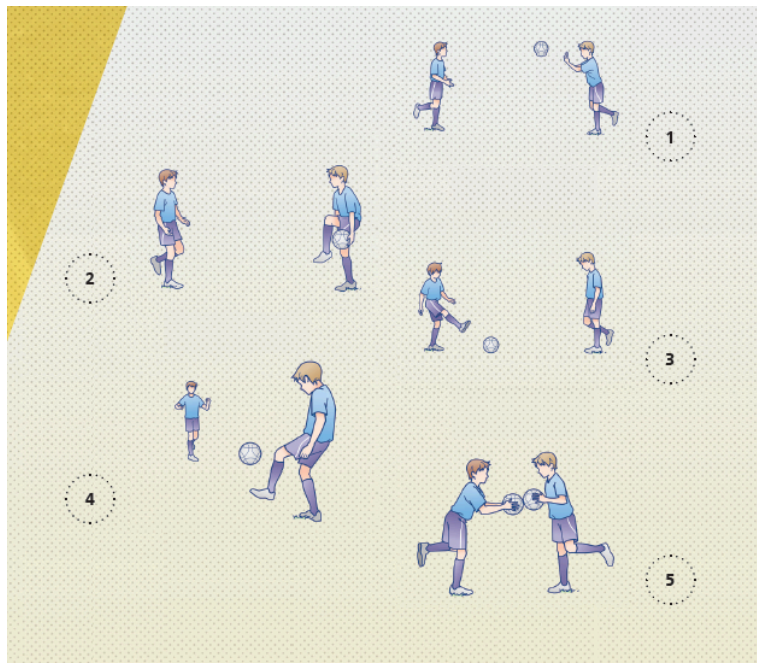
3rd exercise: Single Leg Stance



STARTING POSITION: 2 players stand on one leg at 3-5 metres opposite each other.

ACTION: the players take it in turns to throw a ball to each other. The distance between them should be reduced to begin with and a simple throwing technique used. Alternative types of throwing (both hands, one hand, hard throw, etc.) can be incorporated later.

FOCUS: maintaining balance when given additional tasks.



LEVEL 1:
THROWING
THE BALL

LEVEL 2:
THROWING THE BALL AND
MOVING IT AROUND THE
FREE LEG

LEVEL 3:
PASSING GAME

LEVEL 4:
THROWING THE BALL AND
PASSING BACK WITHOUT
TOUCHING THE GROUND

LEVEL 5: TESTING THE PARTNER'S BALANCE

3rd exercise: Single Leg Stance

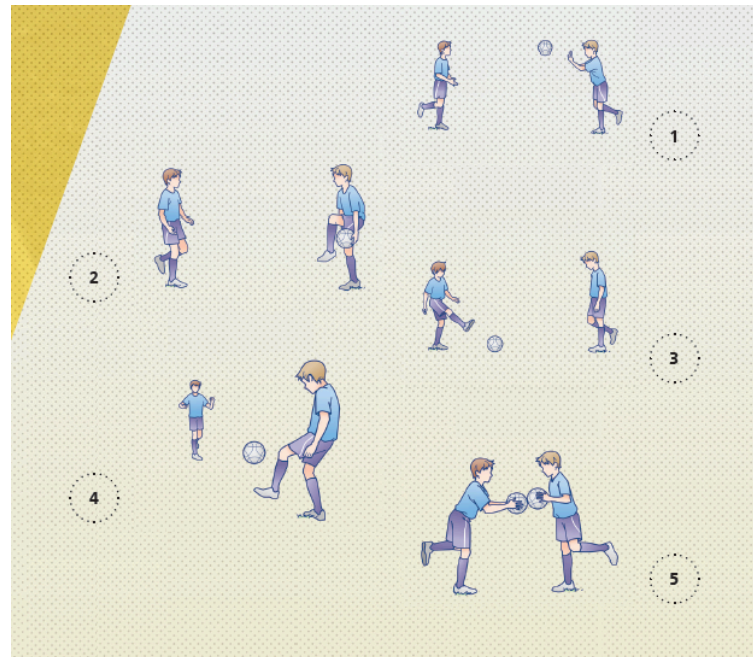


STARTING POSITION: 2 players stand on one leg at 3-5 metres opposite each other.

ACTION: the players take it in turns to throw a ball to each other. The distance between them should be reduced to begin with and a simple throwing technique used. Alternative types of throwing (both hands, one hand, hard throw, etc.) can be incorporated later.

OBJECTIVE: being able to stay standing on one leg in difficult situations without moving.

INSTRUCTIONS TO THE PLAYERS:
“Keep your balance in difficult situations.”



4th Exercise: Press Ups

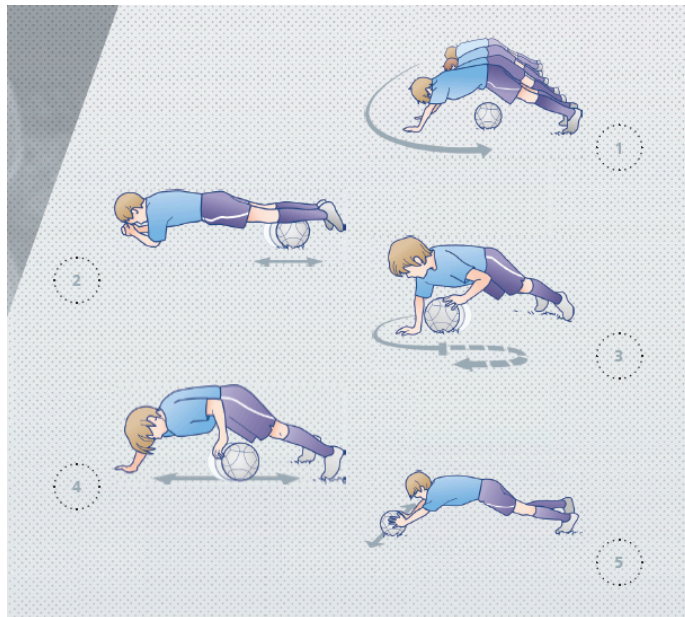


FOCUS: strengthening the core and arm muscles.

LEVEL 1: TUNNEL

STARTING POSITION: one player stands while the other players are in press-up position close to each other to form a tunnel, hands and feet hip-width apart.

ACTION: The standing player rolls a ball down the tunnel and then goes to the start of the tunnel and assumes the press-up position. After the ball has rolled through, the last player in the tunnel takes it and runs to the start of the tunnel, rolls the ball through and goes to the start of the tunnel in the press-up position. The tunnel meanders on in this way. The exercise can be turned into a competition between two groups.



LEVEL 1:
TUNNEL

LEVEL 2:
FOREARM SUPPORT;
SHIN RESTING
ON BALL

LEVEL 3:
ROLLING THE BALL
AROUND THE HANDS

LEVEL 4:
ROLLING THE BALL
BETWEEN HANDS
AND FEET

LEVEL 5: HANDS ON THE BALL

4th Exercise: Press Ups



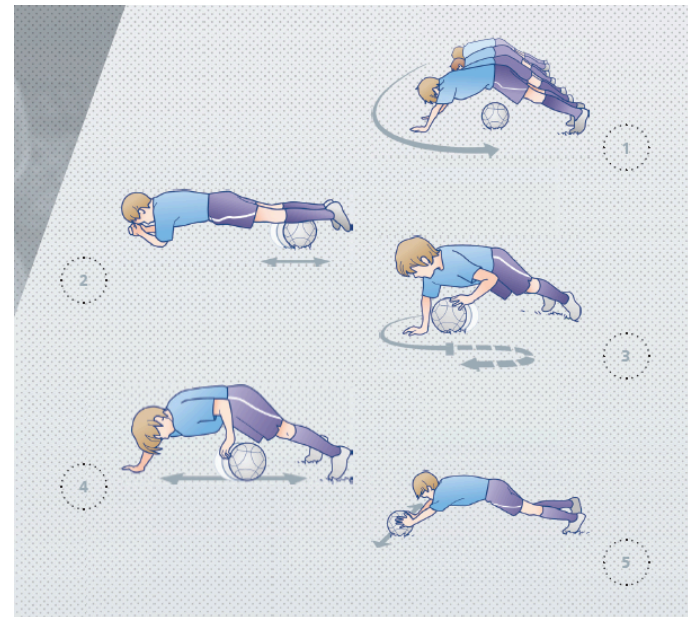
LEVEL 1: TUNNEL

STARTING POSITION: one player stands while the other players are in press-up position close to each other to form a tunnel, hands and feet hip-width apart.

ACTION: The standing player rolls a ball down the tunnel and then goes to the start of the tunnel and assumes the press-up position. After the ball has rolled through, the last player in the tunnel takes it and runs to the start of the tunnel, rolls the ball through and goes to the start of the tunnel in the press-up position. The tunnel meanders on in this way. The exercise can be turned into a competition between two groups.

OBJECTIVE: maintaining body tension during the exercises.

INSTRUCTIONS TO THE PLAYERS:
“Keep your body in as straight a line as possible from head to foot. Tense your stomach and back.”



THE FOLLOWING ERRORS MUST BE CORRECTED:



1 Pelvis too low



2 Pelvis too high



3 Feet turned inwards



4 Feet turned outwards

Head, shoulders, back and pelvis are in a straight line

Pull in the stomach and buttocks

Look down towards the ground

Movements should be slow and deliberate

5th Exercise: Single Leg Jumps



FOCUS: strengthening the leg muscles, improving balance and coordination.

LEVEL 1: FORWARDS

STARTING POSITION: the players stand on one leg on the goal line with clear space between them, i.e. about 2 metres apart.

ACTION: at the coach's command, the players jump forward on one leg, landing on the same leg. The jumps should be as long as possible. Players should stand still for around 3 seconds after landing. After a complete set (10 jumps in total), the players walk slowly back to the goal line.



LEVEL 1:
FORWARDS

LEVEL 2:
BACK AND FORTH

LEVEL 3:
SIDEWAYS

LEVEL 4:
THE COACH
INDICATES THE
DIRECTION

LEVEL 5: THE COACH INDICATES THE DIRECTION;
BALL IN BOTH HANDS

5th Exercise: Single Leg Jumps



LEVEL 1: FORWARDS

STARTING POSITION: the players stand on one leg on the goal line with clear space between them, i.e. about 2 metres apart.

ACTION: at the coach's command, the players jump forward on one leg, landing on the same leg. The jumps should be as long as possible. Players should stand still for around 3 seconds after landing. After a complete set (10 jumps in total), the players walk slowly back to the goal line.

OBJECTIVE: safe, controlled landing and big jumps.

INSTRUCTIONS TO THE PLAYERS:
"Jump as far as you can, land safely, and keep your balance until the next jump."





THE FOLLOWING ERRORS MUST BE CORRECTED:

1

Knee inwards and lopsided pelvis



2

Hips bent, leaning too far forward



3

Looking down at the ground



4

Foot pointing inwards



5

Foot pointing outwards



Body tension: the stomach and back muscles should be tensed, with the back straight and the head extending the spine.

Body tension: the stomach and back muscles should be tensed, with the back straight and the head extending the spine.

Knee to be bent when landing softly to cushion the impact.

6th Exercise: Spiderman

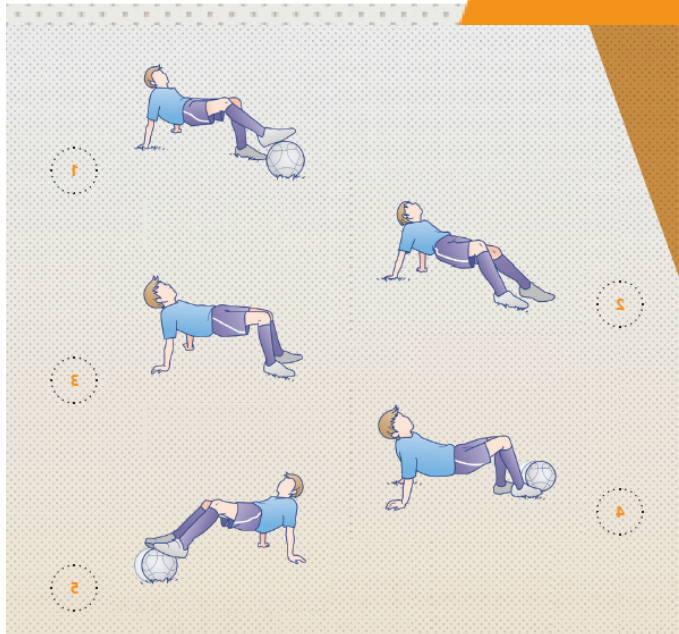


FOCUS: strengthening the core muscles and the hamstrings.

LEVEL 1: STROKING THE BALL

STARTING POSITION: the players support themselves on their hands and feet, hip-width apart, the back pointing towards the ground. The body should be in as straight a line as possible from the head to the knees. The ball is directly in front of the feet.

ACTION: the players lift one leg, touch the ball with one foot and roll it gently forwards and then backwards. They repeat the exercise with the other leg and then alternate the movement with each leg. The movement should be slow and deliberate.



LEVEL 1:
STROKING THE BALL

LEVEL 2:
A PROPER STRETCH

LEVEL 3:
THE CRAB

LEVEL 4:
DRIBBLING

LEVEL 5: BALL BEARING

6th Exercise: Spiderman



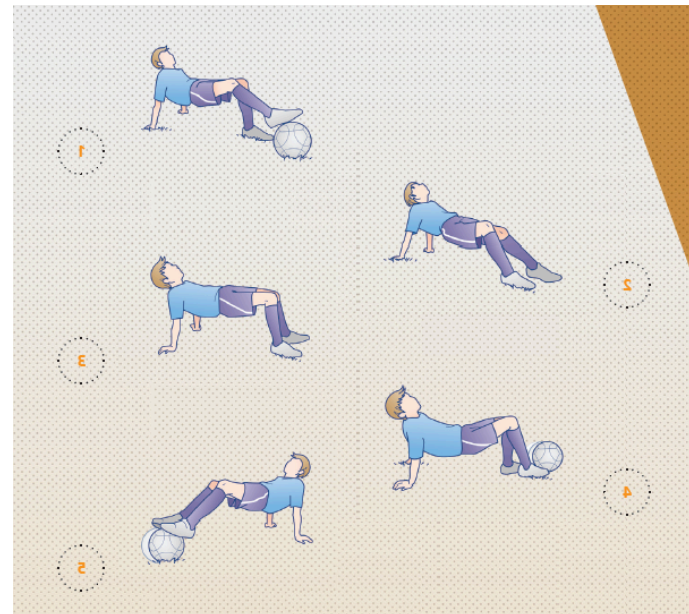
LEVEL 1: STROKING THE BALL

STARTING POSITION: the players support themselves on their hands and feet, hip-width apart, the back pointing towards the ground. The body should be in as straight a line as possible from the head to the knees. The ball is directly in front of the feet.

ACTION: the players lift one leg, touch the ball with one foot and roll it gently forwards and then backwards. They repeat the exercise with the other leg and then alternate the movement with each leg. The movement should be slow and deliberate.

OBJECTIVE: maintaining the body tension throughout the exercise.

INSTRUCTIONS TO THE PLAYERS:
"Keep your backside up and tense your stomach and back."



6th Exercise: Spiderman

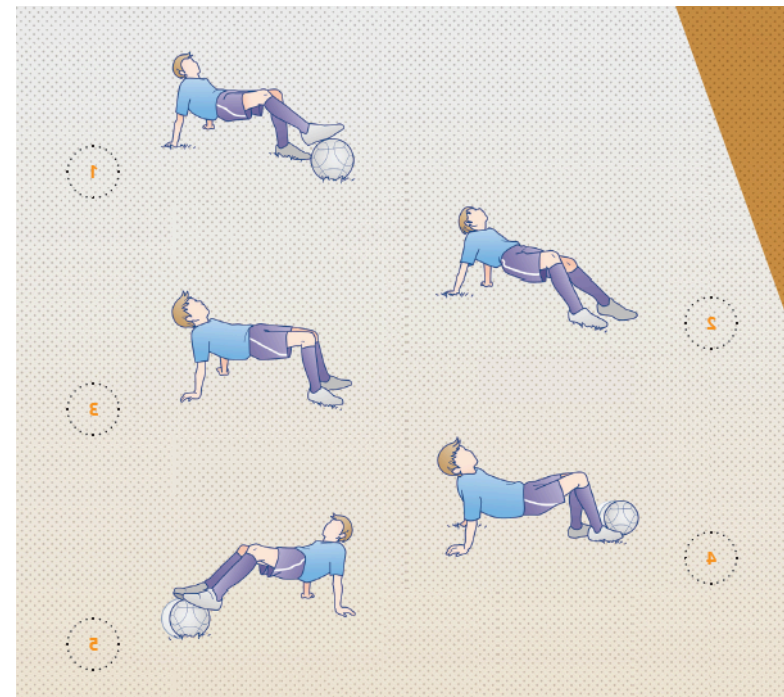


LEVEL 4: DRIBBLING

STARTING POSITION AND ACTION: as level 3, except that the players “dribble” with a ball, which is guided in a controlled manner.

OBJECTIVE: maintaining the body tension throughout the exercise.

INSTRUCTIONS TO THE PLAYERS:
“Keep your backside up and tense your stomach and back.”



THE FOLLOWING ERRORS MUST BE CORRECTED:



1 Wrong position of head



2 Sagging body



3 Feet turned inwards



4 Feet turned outwards

Keep the buttocks up.

The head should be in a neutral position.

The body should be in as straight a line as possible from the shoulders to the knees.

The feet are always under or in front of the knees (knee angle always more than 90°)



Can games help us prevent injuries ????

YES !!!

To achieve this they should have some characteristics:

- ✓ to improve **neuromuscular control and stability....**
by training the balance ability
- ✓ to **strength leg** and **core** muscles

I have to pay attention to the **quality of the movement** and the **correct technique** during the exercises



- the foot, knee and hip of the supporting leg are in a straight line.
- the upper body is upright and in a central position
- the left and right hips are at the same level
- the knee of the supporting leg is slightly bent when standing and bent when landing, to cushion the impact.
- after landing, stay still for 3 seconds





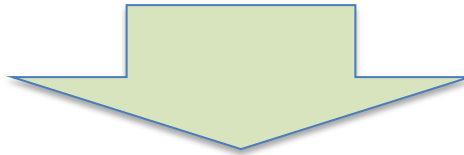
«One, two, three red light»

- ✓ A child on the wall with eyes closed
- ✓ The rest on one line at a distance of 10-12m, aiming of moving to the wall
- ✓ The child on the wall says "one, two, three red light", and turns to the children
- ✓ The children, while moving they should remain immobile when the phrase " one, two, three red light » completed
- ✓ If a child fails to stay stable, then he/she loses



«One, two, three red light»

In order to improve neuromuscular control



The regulation can change and every time the children have to stop, they should be on one leg



“«Koutso» – One leg jumps”

- ✓ The child throws his stone into the first box, and starts with a one leg jump and passes all the boxes
- ✓ Returns and stands with one leg in the previous box of what the stone is
- ✓ Bends, takes the stone and returns to the start
- ✓ If the stone or he/she touches a line loses his/her turn

“stay still in each box for 3 sec”



“Varelakia”

- ✓ The children are in a distance with each other in a row next to each other
- ✓ They lean and touch their hands on their knees
- ✓ The other child must jump from above touching his hands on their backs



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**Thank you
for your attention!!**

Ι Δ Ρ Υ Μ Α
Κ Ρ Α Τ Ι Κ Ω Ν
Υ Π Ο Τ Ρ Ο Φ Ι Ω Ν

IKY



Erasmus+