(For Internal use only)

Scouting, training and enriching children and adolescents in football

Dr. Yitsik Ben-Melech

Optimal game-plan and training for youth football

Purpose:

Presenting **methods, principles, means and phases in scouting and training** children, kids in basketball.

Summary of topics:

Optimal game plan at youth ages

⬇

Optimal youth scouting and training program

⬇

Biological and mental development of children and adolescents in both genders

⬇

Loads, recovery and healthy lifestyle

The program is based on:

- Global models
- Training theory
- Sports science
- Sports medicine
- Conditions, tradition and possibilities in Israeli football

Table of Contents

Foreword

Every young player dreams of competing at the highest levels, a dream in which lies an extraordinary ambition.

Ambition to primarily participate or train in a club, followed by the desire to integrate into the youth and senior national teams and finally, gaining international success with the club and the national team.

This ambition and its derived motivation, make the dream extremely meaningful during the process of education.

In basketball players career, skills are developed in three stages that last 10-12 years until they reach the competitive professional stage, after which they try to maintain their abilities for another 10-12 years, until the end of the career, a total of +20 years.

During childhood, players which managed to "overcome" their participands, stand out and lead their team to achievments, experience difficulties since in adulthood, their competitive development stagnate while their friends continue to walk the path of sucess.

Many young athletes, who have managed to overcome strong opponents in competitions and tough matches (world/European/national championships for youth), go through a difficult experience when their achievements stagnate in adulthood, while their younger opponents continue to walk the path of success.

This booklet, created by Dr. Yitsik Ben-Melech, includes principles and guidelines for matches game-plan, scouting, training and recovery planning regarding volume, intensity, frequency and density which are based on methodical and scientifical models, towards a successful process that will lead to the fullfilment of abilities potential and achievements.

With hope that this booklet will add an additional layer of knowledge and information to basketball coaches and trainers.

Best regards,

Amiram Halevi - Chairman of the Basketball Association

Basketball in international level

Characteristics:

- 70 – 80 matches per year = an average of a match every 5.4 days
- 20-30 playing minutes in each match,
  an average of 10 different scenarios per minute of the match
- About 200 – 400 actions per player for a match
- 5-6 km of running and general movement in each match
- 3-5% of the match time the player holds the ball
- 20 – 40 sprints for a player per match
- 45 – 60 seconds of recovery time is required after each sprint
- 3 – 20 m This is the range for a single sprint (average 7.5 m)
- 10% of sprints last more than 3 seconds (40-50 m)
- During the game, heart rate reaches 160-170 heartbeats per minute
  (85% maximal heart rate for an adult)
- Lactic acid concentration during the match fluctuates between 6 - 10 mM
- Every 10 - 15 seconds there is a change in direction or speed of the player's movement
- Required recovery time after a basketball matche varies between 48 - 72 hours

Injuries and absences:

- In professional teams, around 50 injuries occur per year
  (67% occur during the match)
- 50% of the injuries last several days
  (recovery time is 14 days on average)
- 16% of injuries reoccur later in the season
- Considerable part of the injuries occur while the players participate in national (youth/adult) teams
- In important matches (at the competitive level) - injuries are more common
- Lack of winter/summer vacation may increase the likelihood of injuries, around 6 - 8 weeks after the time when the break was necessary

Physical abilities:

- The physical ability of the player enables to execute technical and tactical abilities and dealing with mental difficulties
- The higher the physical ability - better actions can be performed by the player
- The better the physical ability, more actions can be performed throughout the game
- Higher physical ability prevents injuries and gives the athlete a longer career
- A high level of performance (peak) in the physical aspect may last up to 8-9 weeks, beyond that, recovery is needed

Physical abilities of professional players:

- 10m sprint = 1.55–1.6 seconds
- Vertical jump = 75–80 cm
- Agility ("Talga" test) = 12.8–13.0 seconds
- Maximum oxygen consumption (Vo2max) = 56–58ml
- "Yo-Yo" (endurance test) = 14:30–15:00m

Basketball in Israel

Israel Basketball Association

Registard players in the Israel Basketball Association (born in 1997-2001):

- Youth U17-U19 - 240 teams - 3,000 players (2 classes)
- Teens U16 - 180 teams - 2,200 players
- Teens U15 - 200 teams - 2,800 players
- Kids U14 - 270 teams - 3,800 players
- Kids U13 - 270 teams - 4,000 players
- “Katsal” U10-U11-U13 - 280 teams per class - 4,000 players

Conclusions

- A large dropout occurs in the transition from kids (14U) to teens - 25%!
- Similarly, a dropout of over 35% from teens (16U) to youth (17-19 U)
- From each class, around 35-50 players remain to play in the senior leagues:
  - 1% of them started in “Katsal”
  - 2% of them started in U15 teen
  - 4-5% of them started in U17-19 youth

National teams players:

Players born in 1997:

- 35 play in: 1 in Europe, 1 in Africa,
  5 in the Premier League (1 - starter), 6 in the 2nd leage, 21 3rd league
- 15 players remained with youth teams experience:
  5 in the Premier League, 4 in the 2nd League, 6 in the lower leagues

Players born in 1998:

- 52 play in: 1 in Europe, 1 in colleges, 7 in the Premier League, 14 in the 2nd league, 29 3rd league
- 15 players remained with youth teams experience:
  5 in the Super League, 4 in the 2nd League, 7 in the lower leagues

Players born in 1999:

- 51 play in: 9 in the Premier League, 16 in 2nd league, 25 3rd league
- 14 players remained with youth teams experience:
  8 in the Premier League, 3 in the 2nd League, 3 in lower leagues

Players born in 2000:

- 45 play in: 1 in Europe, 7 in the Premier League, 14 in the 2nd league,
  29 3rd league
- 15 players remained with youth teams experience:
  5 in the Super League, 7 in the 2nd League, 3 in the lower leagues

Players born in 2001:

- A total of 69 active players: 1 in the NBA, 2 in colleges, 6 in the premier League, 27 in 2nd league, 33 3rd league.
- 17 players remained with youth teams experience:
  4 in the Premier League, 7 in the 2nd League, 4 in the lower leagues

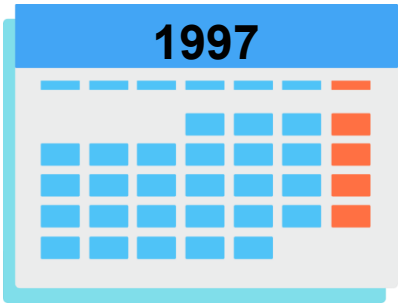
Data summary: In classes of 97'-2001:
76 played in national teams (only 18 of them in all national teams). Currently, 252 are active players: 1 player in N.B.A, 4 in Europe, 1 in Africa, 3 in colleges, 35 in the Premier League (23 in rotation and 12 starters), 77 In the 2nd league, 131 3rd.

Possible reasons for few players who remain in the seniors (and are successful):

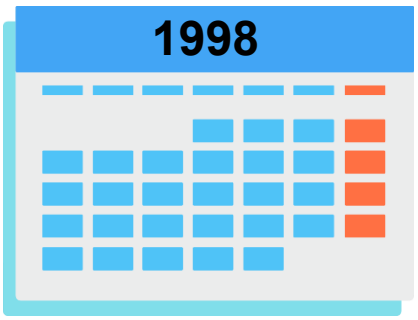
Foreigners preference? Military Service ? Incorrect training in senior teams? Weak league? Inadequate youth scouting and training at a young age?

Players' transitions and continuity in national teams

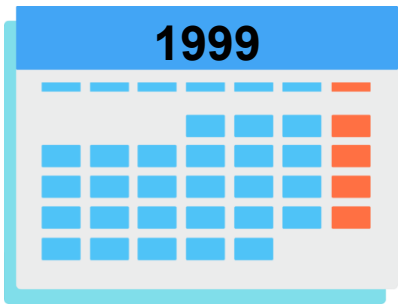
- From 97' cadets: only 4 moved to the youth team
- From 97' youth, only 4 moved to the U20
- From 97' U20 team, 3 moved to the senior national team
- Only 3 97' players played in all the youth national teams!



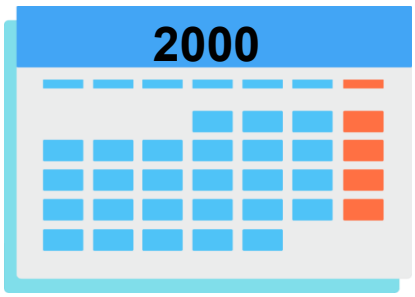
- From 98' cadets: only 8 moved to the youth team
- From 98' youth, only 7 moved to the U20
- From 98' U20 team, 1 moved to the senior national team
- Only 6 98' players played in all the youth national teams!



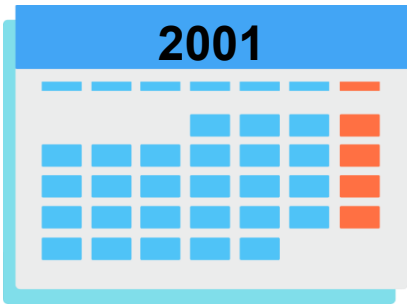
- From 99’ cadets: only 4 moved to the youth team
- From 99’ youth, only 7 moved to the U20
- From 99’ U20 team, 1 moved to the senior national team
- Only 2 99’ players played in all the youth national teams!



- From 00’ cadets: only 6 moved to the youth team
- From 00’ youth, only 4 moved to the U20
- From 00’ U20 team, 1 moved to the senior national team
- Only 3 00’ players played in all the youth national teams!



- From 01’ cadets: only 6 moved to the youth team
- From 01’ youth, only 5 moved to the U20
- From 01’ U20 team, 1 moved to the senior national team
- Only 4 01’ players played in all the youth national teams!



In European countries, 10-15% of young players who start a sport framework, continue to senior teams	
In Israel, only 3-5% continue to senior teams	

Main dropout in Israel, out of 160,000 active U12 players:

At the age of 13-14 - 40% per year (girls at the age of 10-11)

At the age of 16-17, additional 50% per year (girls at 13-14)

Out of 1,000 children who start sports at the age of 10

50-80 (3-5%) remain after the age of 19

Summary

- On average, 5.6 players transition from the cadets to the youth
- On average, 5.4 players go from the youth to the U-20
- Only 18 out of 75 players (24%) born in 97'-2001 played in all the youth teams.
- 37 players (49%) out of 75 youth national teams players were only in one team.
- Only 7 players from these years reached the senior team.

Key highlights

The importance of the quality players training includes:

- A full season program
- High quality matches schedule plan
- Possible addition for international matches
- Deep squads of the teams

Double teams phenomenon:

Four players participated in six youth teams tournaments.
Tamir Blatt became a regular player in senior team,
Roi Huber and Netanel Artzi played a little in senior team,
Tomer Levinson is a premier league player but has not yet made the national team

Two players participated in five tournaments.
Yuval Sussman became a regular player in senior team,
Miron Ruina is a premier league player but has not yet made the national team

Seven players participated in four tournaments.
Danny Avdia became a regular player in senior team.
Michael Brisker, Gil Benny, Yair Kravitz and Dori Sahar are Premier League players.
Yonatan Atias and Ofek Malka are currently 2nd league players

11 players participated in double tournament with one of the teams, but were not in all of them. Noam Avivi, Lior Carrera and Raz Adam are the only ones who have become Premier League players.

Summary and analysis of current situation

Analysing the level and ability of the Israeli vs European players:

1. Very low percentage (25%) of the children who play in the union leagues, join professional senior teams
2. Very low percentage (30-35%) of the senior and U20 players played in the youth teams
3. Senior Israeli players in the premier and 2nd leagues lack international experience.
4. Israeli players are significantly inferior to European players in terms of physical abilities, especially in explosive power and speed
5. Israeli players struggles to cope with heavy loads and to maintain a high intensity of loads in matches and training.
6. The ability of the Israeli players is monotonous, lacking varied basis.
7. Israeli players lack knowledge and understanding of subjects related to healthy lifestyle, methodical and scientific aspects, judgment and match understanding
8. Summary and analysis of activities in youth professional departments show:
   - Large focus and relative investment in national teams
   - Youth departments are based on "membership fees"
   - Coaches and trainers in youth departments work in unideal conditions, pursuing "cash register kids" and short-term success
   - International experience exists mainly in national teams players

Facts

- Only a third of the senior and U20 players were in youth national teams
- There is great potential in low income areas and the small teams
- Scouting and training occur in the club (youth department)
- More than 90 percent of a national team player's training is related to the club
- Many young players play in several frameworks

These data lead to the following conclusions:

- There is tremendous importance to level of training, coaches personality, and their qualifications, status and terms of employment
- It is important to scout and nurture talented players, regarding workloads, volume and content, in all ages
- Pay attention to matches schedule in every each age group, determine the methods, court size, height of the baskets, ball, number of players and playing time

In recent years, we witness a growing integration of children and teenagers from a low socio-economic status. At the same time, we must make a great effort to promote females basketball. It seems that in this area, it is possible to achieve success relatively easily because of the international level, and because of the possibilities of finding many females (almost no competition with other sports). The fact that it is possible to achieve success with females at a young age in a relatively short process, should trigger a certain preference and focus on women's basketball.

Stagnation in senior national team achievements vs success of the youth team:

Israeli youth basketball national teams

Since 1992, they have reached the semi-finals 8 times (out of 23 tournaments)

Qualified to U-21 World Championship in three out of four tournaments

Israeli senior basketball team

Since finishing in seventh place at the World Championship in 1986, the team did not qualify even once for the Olympic tournament (9 tournaments), or the World Championship (8 tournaments).
In 15 European Championship tournaments the team managed to reach the quarter-finals once (2003).

Possible reasons for weaknesses in adults (compared to youth)

1. Multiple foreigners, limiting number of Israelis promoted to premier league
2. Military service delays the development of the young players
3. Lack of intermediate league between the youth league and the premier leagues
4. Scouting players with low potential for future success (better than others but only at a young age)
5. Reaching maximal ability at a young age due to early specialization and focus on tactics
6. Incorrect playing method at young ages (number, density and importance)
7. Participating in multiple frameworks without professional coordination
8. Incorrect training at a young age
9. Prolonged breaks for players who are not participating in international matches (damaging the players who join the national team and damaging internal competitiveness)
10. Lack of international experience (mainly in teams' framework)

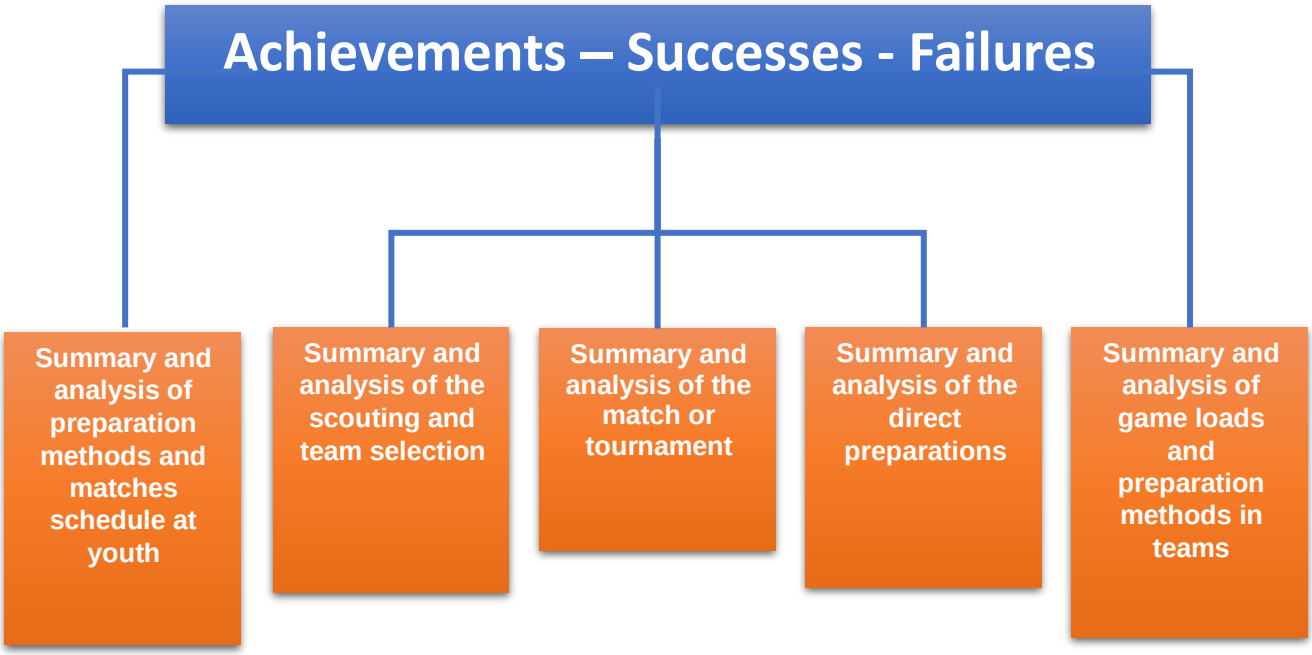
Possible solutions for these weaknesses

1. Reducing the number of foreigners in the professional teams
2. Specific program for unique training and matches conditions for players in military service
3. Creating an intermediate league for U23-U18, so there will be two leagues that between U18 and U23 (currently there is one - U19)
4. Conduction physical and coordination ability tests simultaneously with league's matches
5. Providing incentives (for the club and the player) for players successes
6. Planning tournaments/festivals as a replacement for some of the league programs (especially for U14 and moderately in the older age groups)
7. Limitation of participating in several frameworks. Merging the schools association matches program in specified periods.
8. Matches program (shown below) for the ages of children and boys.
9. Explaining the importance of scouting and training to the teams, setting up excellence centers, reducing the damage of training process in teams
10. Conducting international tournaments in Israel for teams all groups of U18-U14
11. **Improving status, terms of employment, and also the training and qualification of the coaches**

Recommendations for promoting Israeli Basketball

1. Creating an intermediate league (ages of 19-21)
2. Building a professional matches schedule that is suitable for each age group separately, combining tournaments and basketball events and reducing the leagues at the younger ages.
3. Preventing young players from participating in two frameworks at the same time
4. Conducting tournaments in Israel with teams from abroad
5. Conducting tournaments for all age groups during vacations (league games during holidays should be avoided): Sukkot, Hanukkah, Passover, summer vacation.
6. Encourage youth teams and departments to participate in concentrated days during the vacations, which will include: enrichment, physical, coordination and technique training, with social and cultural activities, and also lectures on diverse topics
7. Encouraging teams and players for enrichment training to improve physical, technical, coordinative, mentalabilities. Integrating a multifaceted activity into the training process that will include practicing skills from different sports - gymnastics, judo, athletics, a different ball game and more.
8. Example of enrichment activity: “homework" with tasks that will enrich the player's abilities and his professional experience, and applying them before training, in morning training, on rest days, holidays and vacations

Elements related to success or failure in the game



Analyzing the elements related to success or failure leads to many conclusions:

- Youth departments apply constant pressure for short-term success. Victories today, this week! this year!
- The primary goal, scouting and cultivating talented players for future success is often forgotten. As a result, wrong decisions are made with talented young players. Those who can contribute in short-term are selected. Considerable parts of the training sessions are dedicated to match preparation focusing on team tactics.
- A phenomenon of euphoria and superlative individual and teams successes vs exaggerated reactions to failures
- There is a lack of coordination between the union leagues and the matches schedule of the school association
- When compared to young European players, Young Israeli players lack international experience and in many cases non-existent.

U-20 players (2016)	Israeli premier league players	European premier league players
Only 30% were in youth and cadet teams	10-20 international matches when transitioning to senior team	80-100 international matches when transitioning to senior team

Methods and means for youth scouting

School tournaments and championships

School sport events (also in other sports)

In the neighborhood - community activities

in different sports and frameworks

Tests

School/neighbourhood/community tournaments

Optimal basketball youth training

Physical youth training framework towards significant future success basketball

Required training volume by age

	9-10	11-12	13-14	15-16	17-19
Weekly training units	3 (180 m)	3 (180 m)	4 (280 m)	5 (350 m)	6 (450 m)
Enrichment and personal training units	2 (90 m)	2 (90 m)	2 (90 m)	2 (100 m)	3 (150 m)
Total	5 (270 m)	5 (270 m)	6 (370 m)	7 (450 m)	9 (900 m)

Age	Loads	Volume&Duration	Intensity	Recovery
8-12	Diverse	Large	Small	Short
13-19	Specific	Small	Large	Long

The average age in the top national teams is:
25-27

A transition to international level should be 4-6 years earlier, at the age of: 19-21

Specialization should be 10-12 years earlier, at the age of: 14-15

Initiate regular basketball training 14-16 years earlier, at the age of: 10-11

Optimal training and game plan for children and teenagers

Variables	Training elements (%)				Weekly training units	Court size	Basket Height	Match duration	formation	Matches per year	Age
	Individual/ team tactics	Coordination/ Movement	Physical Preparation	Technique							
4 ball or light 5 ball	5-10	10	5	80	3	Half court	2.60	4x6 school	3x3	10-15 65% tournaments	U8
Light 5 ball	10	10	10	70	3	Side to side	2.60	5x5	4x4	10-15 50% tournaments	U9
5 ball	15	15	10	60	4	Katsal	2.74	5x6	5x5	15-20 35% tournaments	U10
6 ball	15	20	15	50	4	Katsal	2.74	4x7	5x5	15-20 30% tournaments	U12
7 ball	20	10	20	50	5	Regular	3.05	4x8	5x5	20-30 35% tournaments	U14
7 ball	45	-	25	30	5-6	Regular	3.05	4x10	5x5	25-35	U16
7 ball	50	-	30	20	5-7	Regular	3.05	4x10	5x5	35-45	U18
7 ball	55	-	35	10	5-7	Regular	3.05	4x10	5x5	45-50	U20

Training principles at a young age

less players

smaller spaces

simpler rules

more ball contact

more social interactions

Basket size in proportion to players size

more fun

more positive tension

better co-operation

better outcome

better match vision

emphasizing learning

Dilemmas:

- How many players?
- What are the proportions?
- what are the rules
- Organization?

Guidelines for youth training and learning

Planning a competitive level training framework

- Basic and general training and enrichment
- Technique
- Personal tactics
- Team tactics

Introduction

In youth training, 4 stages of study and training are required:-

1. Training and general build-up = versatile motor construction
2. Basic training = personal motor learning and training
3. Specialization training = systematic and gradual build-up of competitive ability
4. Professionalization to a competitive level and maximizing abilities

The goal in the fourth stage is to train the players for the Premier League level and the senior national team.

Coaches and trainers goal with these ages is to scout talented and high potential players that can reach the senior teams and international levels.

Training content should focus on future success. It must allow the player to withstand the required loads during the rest of his career, fulfill himself and maintain a competitive level over time.

The abilities should be both physical and mental. The player needs to be educated for a healthy lifestyle and to deal with different situations and direct himself to success.

Personal abilities and advantages must be cultivated. The player has to learn to take responsibility and manage decisive situations of the game.

Training and learning program should nurture the talented players to a high level of abilities in all areas: technical, tactical and physical abilities.

The sequence and phases of the training are very important.

Guidelines for youth training in ball games by age

Guidelines for training and cultivation of youth (U7-8)

Objectives:

- Training, enrichment and diverse cultivation of movement abilities
- Learning ball activities
- Encouraging creativity in movement with the ball while encouraging enthusiasm and joy
- Learning basic and simple rules of the game

Training composition

Ball game = 20%
General movement instruction = 30%
Simple tasks with a ball = 20%
Small games = 30%

Instructions for the coach

- Activity within small groups, during movement combined with enthusiasm and drive
- Simple tasks with a lot of playfulness and freedom
- Learning simple rules while receiving feedback from the children

Guidelines for training and cultivation of youth (U9)

Objectives:

- Fun games
- Focus on joy and life happiness
- Multiple movements
- Learning basic techniques
- Basic throws technique
- Ball games, a variety of simple ideas, perform with enthusiasm
- Emphasis on fair play

Training composition

Ball game - 35%
Basic technique combined with exercises = 20%
Diverse tasks and variety of games with a ball = 20%
Performing various movements and coordination = 25%

Instructions for the coach

- Small groups, lots of movement
- Enthusiastic games
- Movement activities with focusing on playfulness and freedom of movement
- Showing patience to the children
- Guiding simple tasks
- Developing creativity and ability to cope with game difficulties independently

Guidelines for training and cultivation of youth (U10)

Objectives:

- Fun in the ball game
- Fun in movement
- Train for basics of athletic
- Train for fundamental technique in ball game
- Learning a basic personal tactic
- Learning simple rules of movement and vision in space

Emphases & Values

- Friendship, partnership and fun

Training composition

Ball game = 15%
General coordination = 20%
basic technique exercises for children = 20%
Various tasks with a ball = 20%
Basic diverse training = 25%

Instructions for the coach

- Small groups, a lot of movement activities
- Learning technique while playing
- Showing patience! No pressure or immediate demand for performance
- Teaching personal and team tactics of ball games
- Maintaining decency, courtesy and friendship

Guidelines for training and cultivation of youth (U11-12)

Objectives:

- Combining various games and creativity
- Systematic training of basic technique and applying them in different situations
- Basics of defense technique
- Increasing athletic training (basics)
- Introducing personal and team tactical basics
- Strive for initiative and competitive qualities

Emphases & Values

- Develop habits for a active lifestyle
- Fair play and team spirit
- Dealing with winning and losing

Training composition

Ball game = 20%
Small groups games (3x3) = 20%
Systematic teaching of technique = 35%
Athletics, coordination and physical fitness = 25%

Instructions for the coach

- Teaching the technique in stages and gradually
- Pay attention to correct execution of actions
- Combine athletic and physical training in the game
- Introduce ersonal training
- Profound communication with each individual player

Guidelines for training and cultivation of youth (U13-14)

Objectives:

- Focusing on creativity and entertainment areas of the game
- Training and learning technique in a competitive manner
- Track and field athletics as an important part of training
- Learning higher defense techniques
- Learning higher personal basic tactics (defense and attack)
- Learning basic team tactics and study team tactics structure
- Focus on taking responsibility on and off the field

Emphases & Values

- Developing the ability to play and understanding the game
- Develop leadership and competitive abilities
- Social skill development
- Developing tolerance and respect for friends, coach and others
- Discipline on and off the field

Training composition

Ball game = 20%
Personal tactics = 35%
Technique = 20%
Athletics, coordination and physical fitness = 25%

Instructions for the coach

- Comment players on performance, weaknesses, advantages, improvements and more.
- Building responsibility, initiation, motivation and maintain these abilities
- Encouraging creativity and avoiding rigid tactics
- Encouraging players for variety of roles

Guidelines for training and cultivation of youth (U15-16)

Objectives:

- Strength training and technique
- Specializationing in a specific position
- Stabilization of athletic ability
- Basics for developing resistance training (free weights)
- Further development of a defense technique
- Further development of personal and team tactical abilities (defense/attack)
- Learning complex tactical structures (defense/attack). Understanding the game.
- Development of motivation and joy in the game
- Develop a more serious attitude towards training and matches.

Emphases & Values

- Education for the correct lifestyle of a player
- Education for required habits and behaviors in training and matches
- Education for discipline of a professional player

Training composition

Ball game = 15%
Group and team tactics = 20%
Personal tactics = 15%
Training for technique in a specific position = 25%
Athletics, coordination, physical fitness and strength = 25%

Instructions for the coach

- Aim for intense training and exercises with longer recovery.
- Complex training for the team, without harming the creativity of the individual.
- Teach theoretical and practical technique and tactics.
- Involve the players in understanding of teaching and training.
- Develope hierarchy within the group.
- Combine training components and enrichment activities.

Guidelines for training and cultivation of youth (U17-18)

Objectives:

- Personal preparation for physical, tactical and technical demands
- Specialize in a specific role
- Further development of a strength and athletic abilities
- Further development of personal and team tactics in defense and attack
- Stablization of tactical team structure
- Learning to understand the game
- Promoting tasks on and off the field
- Evolving and educating professionalism

Emphases & Values

- Inheriting professionalism
- Discipline
- Purposefulness in training and matches
- Responsibility and leadership

Training composition

Ball game = 20%
Technical and tactical abilities according to positions = 45%
Specific strength training = 15%
Athletics, fitness and coordination training = 20%

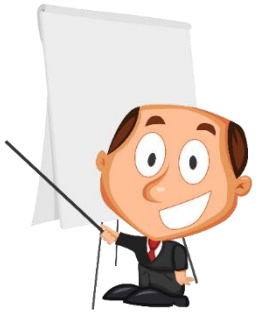
Instructions for the coach

- Do not neglect the development of personal abilities.
- Treating physical and mental loads of each player individually.
- Focus on competitiveness in the game.
- Neutralizing environmental loads (agents, personal problems, etc.).
- Consider loads from other activities (team, school).

Conclusions – (Professor Marko Stojanovic, Serbia)

- Resistance training is the base of a good body and should be treated accordingly!
- Aerobic endurance can be significantly improved by training in high intensity
- It is probably better to wait with speed endurance training up to puberty and then introduce them gradually
- Appropriate and well-planned physical activity assist youth athletes to significantly improve most of the fitness attributes from early childhood.
- CNS (central nervous system) – the system is responsible for several fitness attributes that are related to each other in their contribution to the athlete's physical ability (speed, coordination, agility, strength).
- Youth and children training should be performed in higher work-rest ration compared to adults (contrary to the common belief).
- Recovery - youth athletes and especially children recover faster than adults!
- Youth and children are able and should train very intensively to develop fitness abilities to become stronger athletes.

Mental strength of players and teams is measured by the ability to handle failures and recover from them



Matches and training plan for youth departments and teams

Summary and analysis of current situation shows that:

1. Most of the senior players in the Premier League and in the U-20 and the senior national teams lack international experience.

Comparison:

	Premier league players from Belgium, Holland, Germany	Israeli Premier League players	U-20 and senior national team players
Transition phase to seniors	50-100 international club matches, mainly in tournaments	Only few players participated in 1-3 international tournaments via club/youth team	Only 30% of the players who played in youth teams experienced international matches

2. During transition from youth to adults (ages 18-22) there is a large decrease (compared to Europe) in playing time with small integration into senior teams. In Europe there are also "reserve leagues" or a league for 19/21 ages.
3. Youth matches schedule plan encourages participation in two frameworks (and sometimes even more). The disadvantages:

- Training process is carried out without learning the required long-term elements such as technique, coordination and physical training
- Participating in several uncoordinated frameworks may cause partial, inconsistent and unsystematic training.
- Mental difficulties are generated because of the immediate demand for success in league matches

4. In youth departments there is constant pressure for short-term success.

As a result:

- A wrong selection of young players is made. Instead of choosing talented and potential players there is a tendency to choose players for short term success.
- Significant parts of the training sessions focus directly on the games, spending a lot of time on team tactics.
- Euphoria and superlatives for individual and teams successes, while overreacting towards failure.
- No investment in scouting and cultivating talented players who will be able to succeed in the future.

5. **Matches schedule of the school association is not coordinated with the schedule of the association, which disrupts the training of the young players.**

Recommendations

1. Game plan - establishment of reserve league (U22). Initially with agreement of Premier League teams. The teams will combine youth players and 2 more players over the age of 22. The matches of reserve league will be held as a preliminary match for the premier matches, in senior's teams matchday or the day after.
2. Suitable matches schedule, which will reduce the double games of players in two age groups
3. Combining tournaments in annual program for all ages (10U+12U+14U+15U+U16)

Date	Tournaments	Info
Sukkot	By regions + 8 top teams tournaments	1-2 days, short matches
Hanuka	By regions + 8 top teams tournaments	1-2 days, short matches
November	Final 8 tournament of schools association	2-3 days
Passover	By regions + international tournament for 8 israeli and 2-4 forgein teams (every age group)	3 days

1. International tournaments for Israeli U14-17 teams.
2. Exploring the option with schools association to reduce number of matches (to finish at the end of November) and create a wide, 3 days tournament during year.
3. Hiring the same coach for school's team and the local club.

Recommended distribution for training components for youth basketball

Age	9-10	11-12	13-14	15-16	17-19
Recommennded game-plan	12 in regional leagues + 2-3 regional tournaments	16 in regional leagues + 2-3 regional tournaments	20 in league + 2 regional tournaments + 1 national tournament	24 in local and national + 2 regional tournaments + 1 national tournament	+ 30 1-2 tournnamennts
Training units	3	3	4	5	5
Personal training and homework	-	-	2	2	2-3
General enrichment	2-3	2-3	2* 60-70 minutes	1* 45 minutes	1* 45 minutes
technique	40%	40%	35%	35%	25%
Personal and team tactics	-	-	10%	15%	35%

Physical and coordinative traininng

Movement and coordination games	35%	25%	20%	10%	5%
Strength	-	-	10%	10%	10-15%
Speed	10%	10%	10%	10%	10%
Endurance	-	-	-	5%	5%
Flexibility	-	5%	5%	5%	5%
Theoretical (education, rules, nutrition, lifestyle and mental)	15%	10%	10%	5%	5%

Enrichment program for young players

It is recommended to combine leagues and tournaments in the ages u10, u11, u12, in addition to guiding youth departments towards enrichment program of young players.

Game plan will be according to table's principles at page 76, as well as 2-3 holiday tournaments

The tournaments

Hanukkah - local tournaments, ages of u10, u11, u12, up to 3 teams, 2 short matches. Such a tournament will be considered as one match

Sukkot - local tournaments, ages of u10, u11, u12, up to 3-4 teams, 2-3 short matches. Such a tournament will be considered as 2 matches for each team.

Passover - local tournaments, ages of u10, u11, u12, up to 4-6 teams, 3-5 short matches.
Such a tournament will be considered as 3 matches for each team.

During summer vacation (August) or in Sukkot:
For u12: local tournaments by ability, 8-12 teams in each tournament (such a tournament will count as 4 league matches)
For u10 and u11: regional tournaments of 4-6 teams.

Versatile training for children in basketball:

- Coordinative actions
- Learning skills
- Responsiveness
- Balance
- Combining movement
- Accuracy
- Rhythm
- Gymnastics exercises with coordination
- Visual space

Up to the age of 10

- Coordination
- The basics of the game
- Accuracy and rhythm

Up to the age of 12

- Coordination
- Game basics
- Accuracy and pace
- Gymnastics exercises
- Judo
- Games
- Technique

Team's training alone can not fulfill the required components and volume of training! Moreover, many players do not get proper training and loading!

Therefore, a theoretical and practical enrichment is necessary:

- General knowledge and educational training
- "Homework" to complete required abilities
- Enrichment and additions before training
- Enrichment and additions after training
- Enrichment and additions on vacation day
- Enrichment and additions in morning exercises

Example of a concentrated day on vacation days

9:00-11:30
in two groups

Group A - basketball technique training

Group B - enrichment training (judo/gymnastics/coordination/physical fitness)

Swap after 70 minutes

11:45-12:45 Shower + light meal

12:45-13:30 Lecture ("Nutrition" / "Healthy Lifestyle" / "Rules" / "Mental Aspects")

13:30-14:30 Board games (chess / table tennis / table football, etc.)

14:30-15:00 Team talk with the coach

15:15-16:30 Basketball training (mainly matches)

Concentrated days are used for:

- Social bonding
- Improving various abilities
- Adoptinng a healthy lifestyle
- Enrichment and additions for the training and matches process

In addition, social and cultural activities are recommended:

- Marking holidays and memorial days
- Watching a shows/movies together
- Birthdays
- Enrichment lectures
- Trips
- Cultural events
- More examples: "Bar Mitzvah" day in Jerusalem. A visit to the Western Wall and its tunnels, Tfillin, A visit to the Knesset/President's House/Supreme Court

Concentrated table for annual activity

Age	Annual activities	Types of activity	Activities goals	Highlighted values and training composition	Instructions for the coach
U10	3 holiday sessions: Sukkot, Hanukkah and Passover + 3 local tournaments + Multifaceted activity + 10-15 matches during the year	**Combination of tournaments, multifaceted activity, social and cultural activity** with local matches	**Enjoy the game and have fun.** Movement. Basic athletic training. learning fundamentals of basketball technique. Learn simple personal tactic, simple rules of vision and movement in space	Friendship fun **Training composition:** basketball game = 15% Small teams basketball games = 20% Simple technique exercises for youth = 20% Complex ball tasks = 20% Basic multifaceted training = 20%	An important learning phase begins at this age. Work in small groups, A lot of physical activity. Teach game technique, Be patient! No time pressure, Do not demand immediate high performance. encourage creativity start teaching personal and team tactics. Focus on decency, courtesy and friendship

Age	Annual activities	Types of activity	Activities goals	Highlighted values and training composition	Instructions for the coach
U12	4 holiday sessions: Sukkot, Hanukkah and Passover and summer vacation + 2-3 local tournaments + 1 regional tournament + 12 matches during the year	**Combination of tournaments, multifaceted activity, social and cultural activity** with local matches	**Combining diverse game with creativity, Systematic training of basic technique** and applying it in different situations. Basic defense technique. Increasing athletic (basics) training. Introduction of personal tactical elements. Initial learning of group tactics. Focus on initiative, motivation, achievement and competitiveness qualities	Habits for active lifestyle, Fair Play, Team spirit, Handling winning and losing **<u>Training composition:</u>** basketball game = 20% Small teams basketball games (3x3) = 20% Simple personal tactics = 15% Systematic technique = 25% Athletic, coordination and physical fitness = 20%	Teach technique in stages and gradually. Combine athletic and physical training in the game Pay attention to accuracy of execution. Start personal training and focus on intensive communication with each player individually

Age	Annual activities	Types of activity	Activities goals	Highlighted values and training composition	Instructions for the coach
U14	4 holiday sessions: Sukkot, Hanukkah and Passover and summer vacation + 2-3 local tournaments + 1 national tournament + 15-18 regional matches during the year	**Combination of tournaments, multifaceted activity, social and cultural activity** with local and national league matches	**Focus on creativity** and the game. Entertainment. Training of technique in a competitive manner. Ahletics (track and field) as an important part of training. Improvinng basic defensing and personal tactics (attack and defence) techniques. Focus and basic team tactics. Leaning team/group tactical structure	Develop match playing and understandment abilities. Develop leadership, competitiveness, social skills, respect to coach and players, tolerance and discipline on and off the field **<u>Training composition:</u>** Basketball game = 20% Team tactics = 15% Small games = 15% Personal tactics = 25% Athletic, coordination and physical fitness = 25%	Provide feedback to players on performance (weaknesses, advantages, improvement, etc). Create initiative and motivation and stabilize these abilities. Encourage creativity and avoid rigid tactics. Set players on variety of roles. Focus on players' responsibility

Age	Annual activities	Types of activity	Activities goals	Highlighted values and training composition	Instructions for the coach
U16	4 holiday sessions: Sukkot, Hanukkah and Passover and summer vacation + 2-3 local tournaments + 1 national tournament + 15-18 regional matches during the year	**Combination of tournaments, multifaceted activity, social and cultural activity** with local and national league matches	**Emphesis on technique training. Specialization of role and position. Stabilization of athletic ability Develop basis for strength training** (free weights). Improving personal and team tactical ability (defense/attack). Learning more complex tactical structures (defense/attack). Further development of match understanding. Develop motivation and joy in the game, Transition to a more serious behavior during training and matches	Education for: - Healthy lifestyle of the player - Required habits and behaviors in training and matches - Discipline of a professional player **<u>Training composition:</u>** Basketball game = 15% Team tactics = 20% Personal tactics = 15% Technique in a specific position = 25% Athletic, coordination and physical fitness = 25%	Focus on intense training with longer breaks Complex team training without harming the individual's creativity. Theoretical and practical training of technique and tactics Involve players in understanding the training and studying Develop hierarchy within the team Coordinate training components with enrichment activities

Speed training for youth

(J, Obradovic)

Improvements in speed during childhood follow a non-linear process.
The central nervous system undergoes rapid growth in first seven years.
While coordination patterns and locomotor skills reach adult levels by that time, they are not complete until sexual maturation or adulthood.

First accelerated adaptation occurs between the age of 5-9 in both boys and girls.

Second period of accelerated adaption occurs between ages of 11-14 in girls and 12-16 in boys.

Usually, Boys are able to perform better than girls.

During these periods of natural accelerated adaptaions, the system will have higher ability to respond additional stimuli.

Speed training content for young ages

	Early childhood	Pre-pubertal	Pubertal	Adolescent
Age	0-7	8-11 ♀ 8-12 ♂	11-15 ♀ 12-16 ♂	15+ ♀ 16+ ♂
Sprint training focus	Locomotor movement skills	Technical development	Technical development Maximal sprints	Maximal sprints
Complementary training	Physical literacy development	Polymeric coordination/movement skills	Polymeric Strength Hypertrophy Coordination	Strength Hypertrophy Complex training
Primary training adaptation	neutral	neutral	Neutral and morphological	Morphological and neutral

Sprint training for youth

Age	8-12 ♂ 8-11 ♀	12-16 ♂ 11-15 ♀	16+ ♂ 15+ ♀
Volume (m)	100-250	250-450	Up to 600
Distance (m)	0-30	0-50	0-60+
Exercises per session	3-4	2-3	1-2
Intensity (speed)	Submax-max	Submax-max	Maximal
Training focus	Technique, movement patterns	Technique, sport-specific sprints	Sport-specific sprints
Between-sprints recovery	Full/Almost full (10-20s per 10m)	Full (20-30s per 10m)	Full (30s per 10m)
Sessions per week	1-2	2-3	3-4
Recovery between session	72	72-48	48-24

Strength training for youth

(J, Obradovic)

In the past, there were controversies regarding resistance training in children.
Nowadays it is known that with proper work, resistance training and weight lifting can produce a significant increase in strength at a young age.

Before puberty, anabolic hormone concentrations are low, limiting the potential for significant changes in muscle structure (hypertrophy).
Additionally, strength gains that occur naturally in preadolescent children are modulated by neural factors.

Effectively designed resistance training programs can improve strength and muscle characteristics at a young age, in addition to those generated by normal growth and development. Effective strength improvement can be achieved through a variety of resistance training approaches: machines, free weights, power balls, bands, and body weight.

At a young age, it is important to start with a basic training program that involves all the main muscle groups, for both genders.
First, work on large muscle groups and then small muscle groups. In addition, it is important to focus first on the weak muscles, and always start with a low weight to train a correct technique.

The following table describes recommendation for strength training weekly schedule at a young age, which details training's frequency, intensity, volume and rest:

Strength training	Children (7-12 year)	Adolescents (13-18year)
Frequency	2 per week (uneven days)	3 per week (uneven days)
Intensity	Light load – correct technique	50-80% of 1RM
Volume	1-2 sets x 5-12 repetitions	2-3 sets x 5-20 repetitions
Rest periods	60-120 sec	30-120 sec

Examples for training exercises in weekly plan

Session #1			Session #2			Session #3		
Exercise	**Sets**	**Reps**	**Exercise**	**Sets**	**Reps**	**Exercise**	**Sets**	**Reps**
Parallel box squat	3	12-15	Push-ups	3	8-15	Jump squats	3	5-8
Inverted row	3	5-8	Walking lunges	3	8-12	Hand walk crawl	3	10-20 m
Hip bridge – feet on box	2	8-10	Chin-ups feet on ground	3	6-10	High knee step up	3	6-10 per leg
Plank elbow to hand walks	2	8-10	Swiss ball wall squat	2	8-12	Tricep bench dips feet raised	2	8-12
Resisted lateral arm raise	2	6-10	Cat likes	2	5-8	Alternate lateral lunge	2	8-12
Front plank	3	'ש 30	Lying back extensions	2	8-12	Decline push ups	2	6-10
Back foot elevated single leg squats	3	5-6 per leg	Split squat jump cycle	3	8-16	Slow sit ups 10s	3	3-5
Bent knee windscreen wipers	3	8-10	Side plank hip lifts	3	8-12	Kneeling alternate arm leg raise	3	8-12

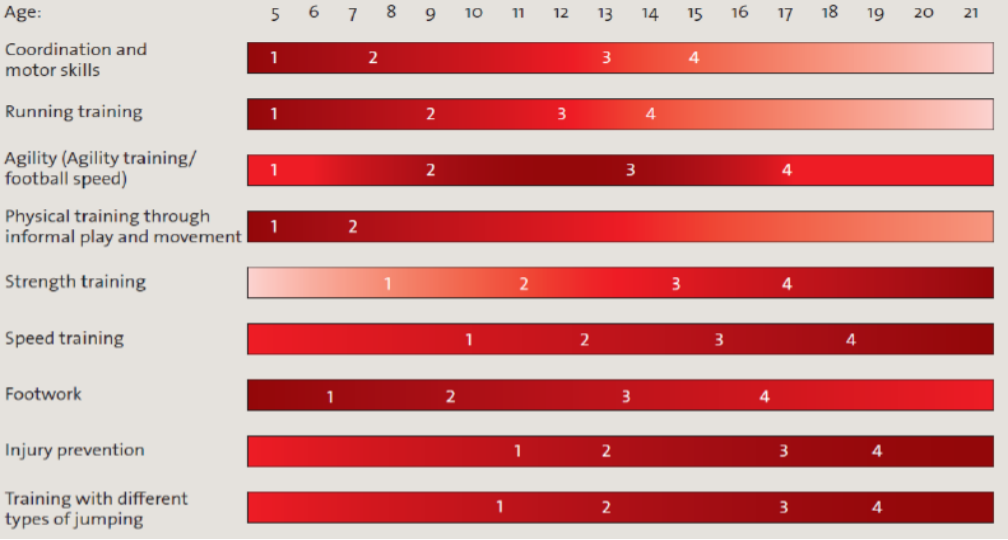
Physical Loading

Training volume distribution in youth

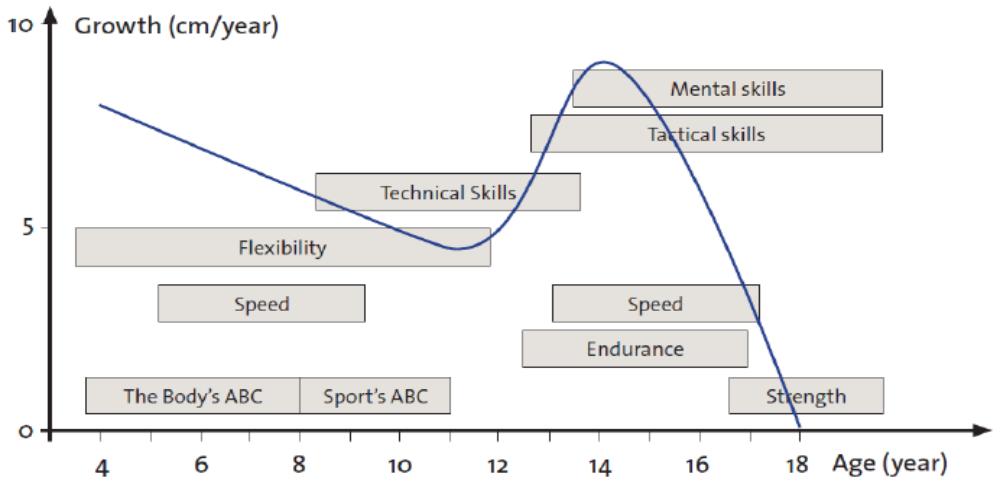
Training type	Free paly	Technique	Tactics	Theoretical	Physical
% of total	45	40	5	5	5

The more active the kids, the better!

Critical time-frames for training components (between ages 4-21)



Darker color = more volume
1-4 = complexity of training



Recommended distribution of training components at youth

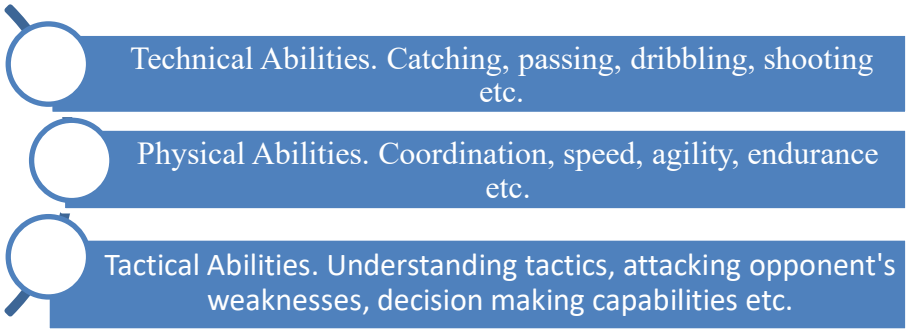
(Y. Ben-melech)

	9-10	11-12	13-14	15-16	17-19
Movement games, coordination and diverse activities	40% (100 m)	30% (80 m)	25% (90 m)	15% (60 m)	5% (5 m)
Strength		Body weight 5% (15 m)	Body weight, jumping, core 10% (35 m)	15% (60 m)	15% (90 m)
Speed and agility	Reaction 5% (13 m)	Reaction 5% (13 m)	Running speed 5% (15-20 m)	5% (25 m)	5% (30 m)
General endurance				5% (45 m)	5% (30 m)
Theoretical	10% (25 m)	10% (25 m)	10% (35 m)	10% (45 m)	10% (60 m)
Total (without theoretical)	45% (115 m)	40% (110 m)	40% (140 m)	45% (190 m)	35% (210 m)

Planning training for youth basketball
(C, Ozkan)

First and foremost, youth basketball coaches need to keep in mind that basketball is a great team sport and education tool that establish a good environment with lots of challenges which kids can benefit at later stages of their life, irrespective of whether they pursue a career in basketball or not. Therefore, those of coaches who pursue only short-term career goals will **deprive kids of advantages of playing basketball**.

1. Skills Teaching. What are the skills to teach?



Depending on the age group, coaches focus on a particular ability more than others. That being said, requirements and competition structure of modern basketball prompt coaches to tap into modern approaches, for example, game-like situation as well as integral methods, which enable players to develop multiple abilities together.

2. Training Periods

2.1 Initial Training Period up to the Age of 8

Basketball is just a part of physical education for this age group. One should never expect to make a significant improvement in technical abilities in this stage. Introducing basics of basketball through various fun games that include catching, dribbling with left and right hand, chest, overhead and bounce passing, shooting proper lay-ups with both hands in combination with running, jumping is the best approach to build the foundation and prepare kids for later stages.

Every kid is allowed to play basketball at this stage. Drills must be fun for kids with a lot of competition so that we retain maximum number of kids in basketball, which in turn will translate into having more opportunity to identify more talents at next age groups. By doing so, we also win kids over other sports which require similar physical abilities to basketball.

Physical constraints like weakness of the muscles and central framework of the body, relatively low accuracy of depth perception limit coaches in terms of variety of drills, though making significant gains in motor skills enable coaches to use lots of equipments (tennis ball, jump rope, agility ladder etc).

2-3 practices per week consisting of 60 min for both boys and girls can be considered as optimum number and duration up to the age of 8. In this regard, coaches also need carefully assess the activity ratio in each drill. In other words, the percentage of kids that are physically active in each drill compared to total number of kids present in the practice is one of the key factors that determine the intensity of basketball practice. To exemplify, let's assume that we have 10 kids in a practice. If any drill requires 5 kids to involve at the same time while others rest get rest or wait in the line, our activity ratio would be 1 to 2, which is reasonable. Ideally, coaches should organize practice drills in a way that activity ratio never drops below 1 to 3 at any point. As such, drills with long lines in which kids wait for their turn are far from being ideal for an effective practice planning. In most cases, the more kids we keep active in drills, the higher intensity we have and the more work we do in unit of time.

2.2 Training Tweens from the Age of 9 to 12

In this case group we often see a large number of newly recruited kids. More developed motor and cognitive skills enable us to introduce rules of basketball and organize further basketball related drills. Drills that are used in standard situations to stabilize the basic techniques happen to be replaced by evolving situations with some rules and restrictions.

Nowadays one of the most common ways of developing technical abilities is small-sided games, which could be introduced by coaches to this age group.What is crucial while choosing 2 on 2, 3 on 3 small-sided games is incorporating moves that also develop physical abilities of players. Focusing solely on technical abilities would not benefit players to develop physical abilities, which are extremely important in today's basketball.

Essentials of Improving Physical Abilities

Coordination ⟶ Speed ⟶ Agility

Arguably, coordination is likely to be one of the most neglected physical ability by most coaches. Having a well developed coordination enables player to synchronize all body parts to perform a particular movement. What type of coordination we need to emphasize?

1- Eye & Hand Coordination

2- Eye & Hand & Foot Coordination

3- Team Coordination. Capability to perform various moves together as a group

Eye & Hand coordination refers to syncronization between eye and hand for an intentional movement. Tennis ball drills are extensively used for this purpose.

Eye & Hand & Foot coordination is essential to perform activities like catching, and also plays a major role in developing footwork,which enables players to do a wide range basketball movements. Simultaneous use of basketball,football or volleyball and agility ladder is highly effective.

xecuting technical basketball abilities is by no means possible without a proper coordination. Another benefit of improving coordination is proper limb control, which helps players prevent from potential injury problems that might occur at later age groups. Needless to say, no basketball player can gain agility without good coordination regardless of speed level. Furthermore, it's important to keep in mind that second half of this age group is ideal to develop speed reaction together with enhanced hand&eye coordination. By running simple tennis ball and acceleration/deceleration with basketball drills for 6-7 seconds, speed reaction and acceleration abilities can be enhanced.

Also important to note that forming a proper **pocket shot technique** is important before moving to next age group as correcting poor shooting technique becomes difficult in following years. It is relatively easier to teach players bringing the basketball further up(developing pocket shot technique) than fixing a totally incorrect or poor shooting form. Besides that, in women's basketball, proper pocket shot technique is definitely a good option even in professional level.

3 to 4 practices per week, consisting of 75 to 90 min for both girls and boys can be considered as ideal for this group.

2.3 Puberty Period - from the Age of 12 to 16

Kids in this age group usually grow taller quite fast, along with muscle gain and strength.

A great window of opportunity exists before the age of 16 in terms of developing technical abilities – building solid shooting technique, accurate passing, 1on 1, 2 on 2 abilities etc. Introducing basic understanding of spacing and geography of the basketball court (how to act and play w/ or w/o basketball on particular spots of the court), team coordination are also among common skills players in this group need to acquire. Also, use of equipments, demonstration, explanation on the basketball court give better results because of capability of complex thinking, which is more developed as oppposed to previous age groups .

It is necessary to simulate a wide range of game like situations with small sided games in practices, in which we also need to incorporate physical abilities like **acceleration, deceleration and even change of direction**.

Why to use small-sided games and what type of small-sided games are ideal?

- Plenty of space on the basketball court. Teaching how to maintain good spacing on the basketball court takes quite a long while at youth level, and therefore 3 on 3 small sided games are ideal for this group. By doing so, we bring more opportunities to score and also keep the repetition number high. Keep also in mind using 3 on 0 small sided games for warm up purposes can be considered.
- Great tool to develop decision making and game intelligence for youth players. It is critically important to keep the brain active in all drills since decision making is extensively in demand by today's basketball. Creating advantage and handicap situations, introducing restrictions in drills help players in developing decision making in real game scenarios.
- Small sided games enable coaches to build competitive environment in practices, which features fun factor of basketball, the main motive for most youngsters to play basketball. Make sure that certain goals are included in drills so that players compete with each other.

Integral Method

Long gone are the days when coaches thought technical and physical abilities can be developed independently. Other than that, separately working on physical abilities results in losing the acquired skill at a later stage of the season. As puberty period is of critical importance to develop physical abilities, coaches need to incorporate actions in drills which contain several physical abilities like speed reaction and anaerobic alactic power.

Vast majority of technical abilites in basketball can be combined with physical abilities. To exemplify, a shooting drill that also contains footwork and dribbling can simply be integrated to endurance ability and/or anaerobic elactic endurance. Likewise, fast break drills can simply be organized in the way that speed,acceleration/deceleration and alactic power/system are developed at the same time.

90 minutes 4-5 practices per week might be ideal for this age group,which may vary depending on the competition structure in the country.

3. Practice Planning

Last but not least, practice planning is one of the most underrated tasks by most basketball coaches. Even though it is time-consuming to create a mothly/annual practice plan and hard to stick to it throughtout the season, planning helps in the sense of creating intensive practices which are similar to competition in respect to difficulty. Besides that planning helps coaches realize what is efficient/inefficient for the team and what are the improvement areas. Annual and monthly plans can be tweaked along the way since unforeseen situation may occur anytime.

Annual and Monthly Practice Planning Example

Annual Planning(min) Practice

		September				October				November				December			
Offense	**Weeks**	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
	Warm up																
	Passing																
	Ball-hand.																
	Dribbling																
	Cutting																
	Shooting																
	Fast break transition																
Team Off.	Motion off.																
	xxx																
Defense	Def fund.																
	Deny																
	Help side																
	Help and rec.																
	Close out																
	Ball press.																
Team Def.	Full court press																
	xxx																

Long term athlete development (L.T.A.D)

LTAD principles

Vision and goals

"Building a professional guiding program for all participants of sports industry, a program that directs Israel to achievements at national and international level"

Professional background

Introduction

High-quality professional planning and its implementation is an important key in promoting a young athlete towards professional achievements while fulfilling maximum personal potential.

Planning is a consistent and graded basis for the coach to work with the athlete in order to improve, this program was developed with attention to professional and scientific aspects with a long-term vision that places the athlete at the center of the system.

The program is for all who is involved in training and accompanying the young athlete: coaches, parents, teachers, and other individuals, at local, regional and national levels of activity.

The program will asist the coaches and instructors to comprehend the importance and understanding of learning the profession’s components at the ages of 6 to 15/16.

The hope is that with the approach of training technical and tactical skills, physical and mental abilities, that at the end of the process, the youth in age 15/16 will turn the training process to competitions and victories, with an optimal basis that fulfills the maximum personal potential.

The professional planning will not come at the expense of the coach's ability to educate and respecting the needs of the athletes and their personal development.

Key factors in building the program

The professional program below is a professional need that often created from an existing problematic situation as detailed:

In most cases, nowadays activities include the following elements (or some of them):

- Large quantity of games/competitions in relation to number of training sessions
- Lack of knowledge, that causes coaches and instructors to train children in the ways and methods of training adults
- Training and competition methods for males are applied to females
- Short-term preparation aims for winning and not pleasure and long-term processes
- Chronological age is a major factor in training planning, instead of biological age
- Preference of early developed athletes over athletes who develop late
- Lack of awareness for 'critical' and 'sensitive' stages for learning and absorbing physical skills and skills
- Early specialization in specific sports, aims children towards one sport over another
- Focusing on what is good for the association and not what is good for the child
- Parents' lack of awareness
- Lack of a single method in various frameworks, which aims for interests of the child.

As a result of these and other factors, the young athlete has many disadvantages, which affect several short and long term areas:

- Lack of ability fulfillment in adulthood
- Decrease in movement abilities
- Poor development of skills
- Implementation of technical errors
- Less enjoyment of sports in older age
- High risk of injuries
- Reaching the peak of ability at a young and unoptimal age
- Shorter sports career and more.

The data bellow and the points above are the scientific professional basis on which the program was created.

Nurturing years

Herbert Simon, a Nobel Prize winner in behavioral economics and decision-making process of business organizations: "Planned training lasts 10 years to excel in any field". In addition, researchers Bloom (1985) and Erickson (1993) also claimed that it takes between 8 and 12 years of training for the young athlete to become an elite athlete. There is a common definition, the "law of the 10 years" or the "law of the 10,000 hours" (it doesn't matter if the training takes less or more time, around 8000 hours, the principle remains the same). This means that the child's development and becoming an elite athlete is a long process, which requires patience, caution, deep and correct planning of the training, competition and recovery process. There are no shortcuts to success. Rushing these processes with multiple competitions will prevent physical, technical and mental abilities to fulfill.

Planning

Multi-year planning (periodization) is a framework for organizing the athlete's development process relating to training, competitions and recovery. The process is created logically and based on scientific aspects, aiming towards reaching the maximum fulfillment of the potential at the appropriate time. Long-term planning takes into account elements such as growth, maturation, training ability, mental development and more. Planning must be adapted to the athlete's biological age.

Multi-year periodization is divided into 6–7 periods (according to the proposed model - see table 2 below).

Biological age - chronological age

Chronological age reflects the real age, the number of years, months and days that passed from birth to presnt. On the other hand, biological age reflects the degree of development in physical, movement, cognitive, mental and other aspects (chronological development does not necessarily correspond to biological age).

The stages of training in sports should be based on biological development (biological age) and not on chronological age. Everyone grows eventually, but timing and rate of growth are different between individuals, even up to a gap of years between children that were born at the same time. In training planning, this fact must be taken into account and the training process must be adapted to the biological age.

It is very important not to excessively prefer children who developed relatively early over those who are late to develop. This phenomenon is also reflected in the preference (naturally) of those born in the first months of the year that usually developed first, over those born later. There is also a preference for those who appear stronger and taller due to early growth (which is usually a temporary advantage).

Basics

All athletes must acquire basic athletic ability at the appropriate age (usually at a young age), since the children's nervous system develops rapidly (before the period of accelerated growth), activities related to this system should work a lot. These activities include the following components: agility, balance, coordination and speed. It is likely that those who do not follow this principle will not reach their maximal potential abilities in the future.

The **FUN**damentals stage contains the word FUN, which is the key to the learning and training methods of fundamentals.

Simultaneously to physical basics, during the pre-accelerated development period, the body is in an excellent condition for learning basic technical skills in wide variety of sports. At a young age, wide variety of sports makes it easier in the future to add specific abilities at a high level in the chosen sport.

Specialization

Specialization is a process in which the hours dedicated to the specific profession are increasing in relation to the other training components. It is possible to assume that in sports with late development (ball sports, combat sports and more), the specialization process should be started gradually - from the age of 10 onwards. In addition, at this stage one should concentrate on the basics of the sports.

It is important to emphasize: early specialization leads to one-dimensionality, lack of basic movement ability, high tendency of injuries, 'burnout' and early retirement from competitive sports.

Considering the previous sections regarding that the required time to build a gradual training process in the sports industry takes over than 10 years – the specific age of specialization differs from one industry to another and is derived from the age that the young athletes begin to reach achievements.
Examples in table 1.

Table 1
Ages of training, specialization and achievement in different sports (Bompa 1999)

Sport	General training age	Specialization age	Achievements age
Athletics: Sprints Horizontal jumo Throws	 10-12 12-14 14-15	 14-16 16-18 17-16	 22-26 22-15 23-27
Basketball	**10-12**	**14-16**	**20-25**
Football	10-12	14-16	16-22
Handball	10-12	14-16	16-22
Voleyball	10-12	15-16	16-22
Judo	8-10	15-16	16-22
Gymnatics: Men Womeb	 8-9 6-8	 14-15 9-10	 22-25 18-18
Swimming: Women Men	 7-8 7-8	 11-13 13-15	 18-22 20-24
Sailing	10-12	14-16	22-30

Training ability

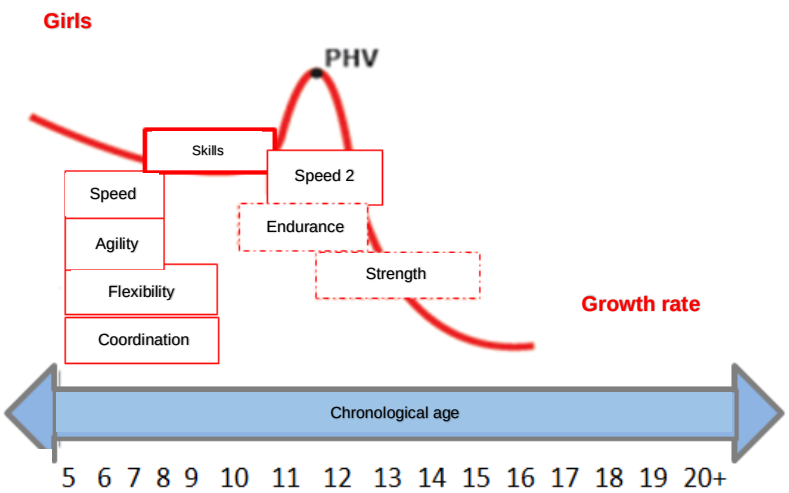
Training ability is the athlete's response to stimuli as a result of training (which are varied in the different stages of development and growth). It is very important to be alert to the different needs of the children according to their biological development stage. As mentioned earlier, different time periods have "opportunity windows " - critical stages in which the body is able to absorb and respond to different components of physical and technical abilities more than in other stages.

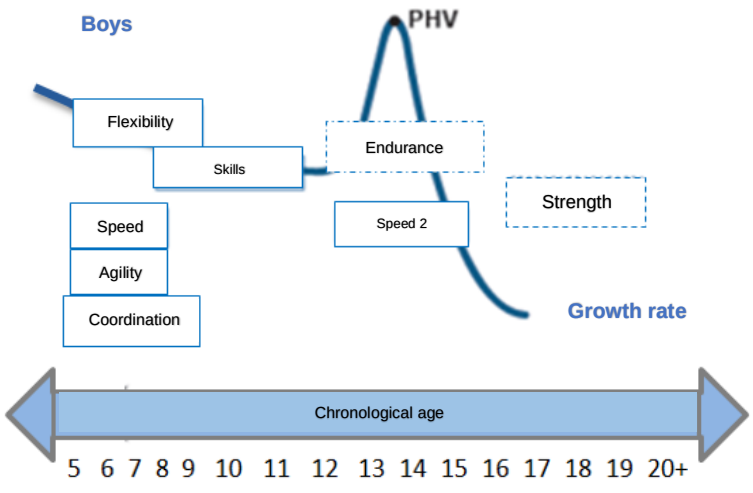
During these periods, window of opportunity creates a sensitive period for specific areas, for example:

- Sensitive period for improving the ability of **speed and strength:**
  7-9 and 13-16 for boys
  6-8 and 11-13 for girls.

- Most sensitive period for acquiring technical skills is before the start of accelerated growth: between the ages of 9-12 for boys and 8-11 for girls.

Windows of opportunity to work on different components for both genders





(PHV = Peak Height Velocity)

Mental, cognitive and emotional development

To create a perfect athlete, It is not enough to develop physical and technical abilities. There is an obligation to also include all the cognitive, mental and emotional aspects of the athlete, throughout various stages of his development, include following areas: training, competitions and recovery. These aspects will also include enjoyment, decision making ability, motivation, educational behavioral and sportsmanship values. The activity should match the cognitive and emotional readiness of the player.

Long-term planning of competitions

Ideal competitions planning throughout the years of the athlete's development is an important element in his successful (or unsuccessful) development. The common practice in sports is to clone competition models of adults to youth, this practice creates many problems: multiple competitions lead to less time for training, over-focusing on competition preparation instead of basic and technique training, a greater chance of the athlete 'burning out' - early retirement, and the participation of current developed players and not of all the players (especially those who are late to develop) - with the aim of winning (common in ball games). Situations like this may cause the coach to belive the team is improving, but that is not the case for the individual athlete.
Long-term planning of competitions should include the correct volume of competitions, enjoyment, focusing onnumber of participants and not the achievements, adjusting rules to the age of the players and setting correct goals (up to the age of 15 - winning is not the most important). Optimal planning and implementation of competitions throughout the athlete's development process is an important and decisive challenge in his creation.

Integration between sports frameworks

It is important to note that any physical activity performed by the athlete in each of the stages of his development has an effect on the final product. Therefore, physical education classes, free activity, organized framework training, all of these, should be synchronized properly for ideal development of the athlete. All the staff and professionals in all frameworks who work with the athlete along the way (teachers, coaches, instructors and even parents) should pay attentions to these recommendations.

Continuity - sequence

Different stages of the athlete's development are built on top of each other and cannot be separated. While a coordinated and correct sequence may lead to maximum fulfillment of capabilities, an rushed process and/or skipping steps may ultimately result in only partial fulfillment of the potential.

Age characteristics and the needs arising from them

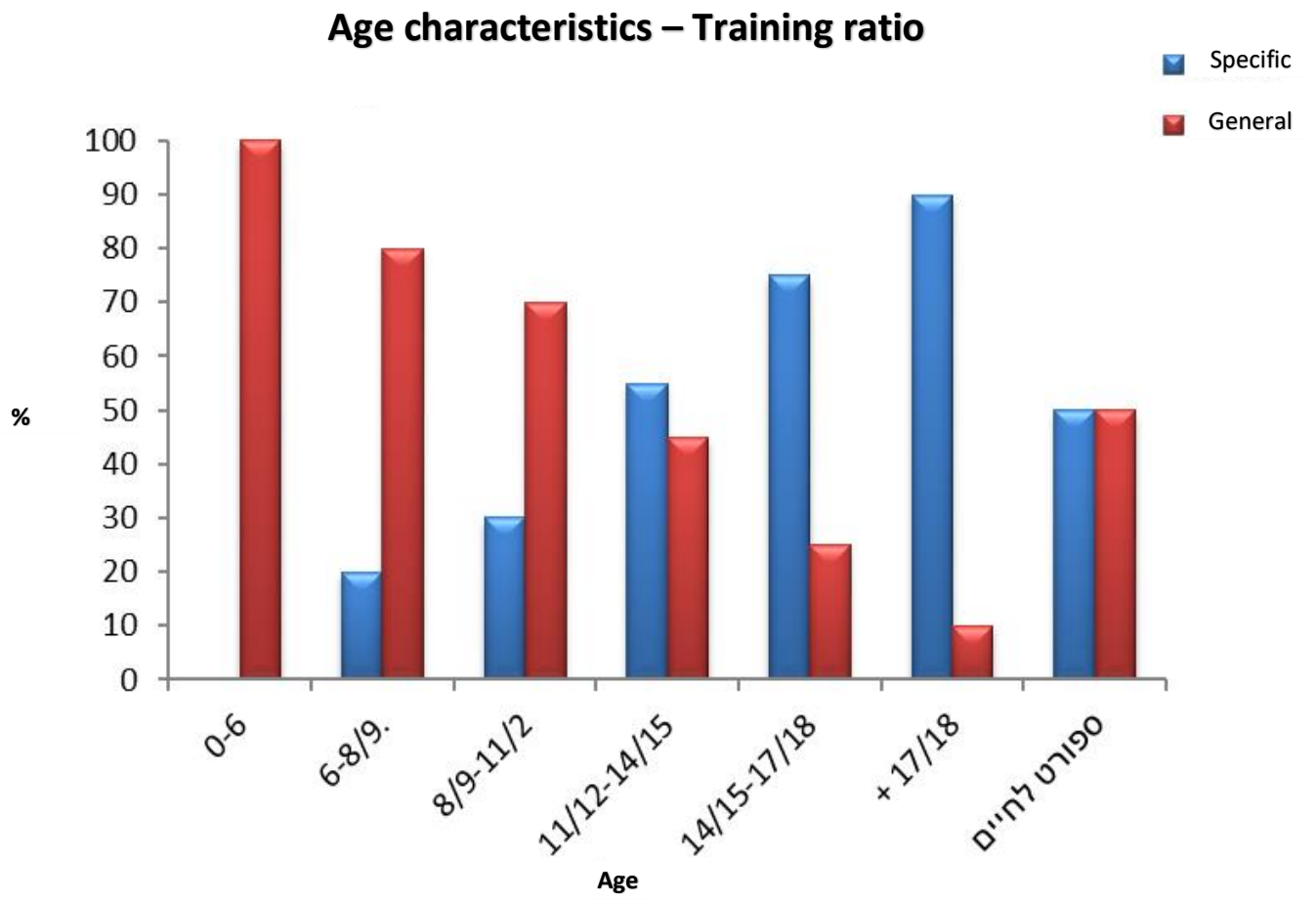
In order to develop the athlete's motor and movement abilities, it is important to be familiar with characteristics of physical, motor and social-emotional development, and also, the needs arising from these characteristics.

Age	Goal	Psychological	Physical	Tactical	Technical
boys and girls: 0-5	Enjoy acquiring plenty of physical activities that develop athleticism	Early activity improves self-confidence and self-image, encourages brain functions, motor and social skills, emotions, creativity, imagination and fun	Unstructured activity combining various movements helps building strong bones and muscles, develops posture, coordination, balance and efficient movement	Learning game rules and spatial orientation	Running, pausing and changing direction (catch-ups, relay races). Working on the shoulder girdle is critical at these ages - crawling, dragging, pulling, etc. Ball (soft) games in a wide variety of shapes/sizes. Ball throwing games with both hands. Creating fun games that combine: jumping with two legs, with one leg, side jumbing, horizontal jumping etc.
boys and girls: 5-6	Practice basic movements and applying them in different games. Focus on enjoyment and fun during the activity	The coach needs to lead the young kids. Learn about conduct and values of an athlete. Learn how to concentrate on the task and how to control emotions. During training, children cannot sit and listen extensively	Practice different skills while moving: General movement exercises (knee lifts, swings, agility, rolling) Hand and eye coordination, spatial orientation Balance (body control, body awareness)	Learn game rules, running directions and opposition actions	Technical abilities in this category must effectively support the tactical recommendations. Imitation (the trainer demonstrates) of basic elements related to the specific activity/sport.
Boys: 6-9	Learnn all the basic movement skills and building	The kid tends to be introvert, encourage him to	Spatial orientation, balance, speed, agility, strength,	Learn to look up during action, control body movements, understand when to attack and defend,	First, learn correct technique of movements. Afterwards, learn correct running technique (with and

Age	Goal	Psychological	Physical	Tactical	Technical
Girls: 6-8	athletic ability. Window of opportunity for physical abilities: flexibility, coordination, agility and speed.	gradually find a place in the team. The coach will encourage, affirm and create fun games. The coach will focus on effort rather than result. Children must be active because their attention is usually short. Children have limited thinking ability, they have to repeat an action many times. Children should be able to experiment and create on their own.	pulling, tracking and landing. unstructured physical activity. Mobile games that include passing, catching, running, changing direction. Exercises with resistance (running, throwing, kicking)	how to mark, and improve reading game-play situations (e.g creating space)	without ball), jumping and landing technique, running and stopping, and also specific skills (holding, shooting, kicking, passing, etc.).
Boys: 9-12 Girls: 8-11	Learn and practice specific sports skills	At these age the athletes use knowledge, interpret and draw conclusions. Also, they have the ability to recall specific information (movement, cognitive) and use it. The coach must demand a higher degree of concentration and involvement in training.	Develop relevant basic coordination, speed and agility. Development of decision making. Work on strength endurance exercises without additional weight, and on core muscles.	Learn to play a smart and efficient game. Play games with scores. Practice basic (attack/defense) movements. Read simple situations (defense/attack). Observe at opponent's weaknesses and use it. Learn to play consistently, using given aims.	Emphasis on gradual development of game abilities. Learn basic coaching skills.

Age	Goal	Psychological	Physical	Tactical	Technical
		Learn to understand and develop the competitiveness, how to deal with mistakes effectively, create a systematic plan towards improvement, develop ability for self-management and responsibility, respect the coach, players and referees. Players can't be afraid to make mistakes and all players must learn to be team players.	Learn different sports games that will develop and improve speed, agility, coordination and balance.		
:Boys 12-15/16 Girls 11-14/15	Practive how to train. Training is at the center.	Learn to face the mental challenges of competitions. athletes should be trained in competitive situations through training or competitive matches and exercises. Maintain enthusiasm and enjoyment despite potential moodiness. Develop the player's identity (work ethic, competitivness). Learn how to manage pressure. Situation awareness and potential actions.	Period of peak rapid growth. Focus on aerobic training while developing skills, speed, strength and flexibility. Rapid growth of the bones, tendons, ligaments and muscles emphasises the need for flexibility and coordination training.	Read more complex match situations, quality decision making under pressure, cooperation by detecting opposition's disadvantages and advantages.	Focus on improving training skills. Learning and practicing complex skills.

The following graph summarizes the ratio of training throughout life, specific (sport) versus general training.



Long-term athlete development (LTAD) model

Background

The model for the long-term cultivation of athletes was developed in Canada as a basic need for sports in light of the changes in physical activity, especially with increasing number of stimuli not requiring physical activity. Lack of sufficient activity created deprivations among young ages over the years. A lack of basic motor skills can be the difference between a performance that earns the athlete an Olympic medal and a 16th place in the competition. Establishing a core set of motor skills at a young age allows a sense of achievements and creating a positive relationship with sports and physical activity. Successful experiences in sports at a young age, combined with the acquisition of versatile sports skills, allow children to get to know the activity in several sports and to integrate and increase the chance to regularly participate in physical activity in other ways as well. The L.T.A.D framework aims to create stable elite athletes, while at the same time seeking to provide an opportunity for all children to grow into a safe and healthy adulthood.

The model includes seven stages:

1. Active start
2. FUNdamentals
3. Learn how to train
4. Train to train
5. Train to compete
6. Train to win
7. Active for life

The steps can be divided into three main groups:

1. The first three stages (1-3):
   Phases 1-2: encourage learning basic movement
   Phase 3: branch sports basics
2. Phases 4-6: focus on excellence.
3. Phase 7: includes physical activity for life.

Details of the phases and recommended activity at each phase

Active start:

Ages 0-6

At these ages, children should be exposed to unstructured activities that incorporate a wide range of body movements.
The goal: to learn basic movements and use them in the game.
Early activity has many advantages: it helps in building strong bones and muscles, developing posture, coordination, balance, correct and efficient movement and also strengthening self-confidence and self-image. It encourages brain development functions, gross motor skills, social skills, emotions, creativity, imagination and enjoyment of being active. It contributes to achieving a normal weight, reducing stress, improving sleep and more.

Physical activity is essential for healthy development of the child in the first six years of his life. It is especially significant in the first three years, during the rapid growth of the brain. Learning at this stage, more than in the following years, creates more connections between brain cells (Gruhn, 2002).

Recommendations for activity:

- At this age, physical activity should always cause pleasure and fun and be part of every day of the kids. Active play in a safe and challenging environment is the best way to keep children always active.
- It is recommended to make children perform basic movement activities, with general basic skills:
  - Encourage the to run, and not just in a straight line.
    Running should include stops and changes of direction,
    all types of catching games are great for this age.
  - Focus on throwing and catching skills with a wide variety of soft objects and balls of different sizes. Mix catching a large ball with two hands, progress to smaller balls and eventually, catch with one hand. It is important to adjust the accessories to the child's age and abilities.
    In the learning phase, use balls that don't bounce too much or bean bags.
    In throwing, start by trying to aim at a specific target with an object that the child is able to hold with both hands, and later increase throwing distance using the right and left hand.
  - act in a playful way while changing body forms: crawl and roll upward, downward, from side to side, etc.
  - Play balance games: stand on one leg, walk along a line marked on the ground and/or on a low balance beam and then try to balance on different body parts.
  - jump while changing body shapes in the air, test vertical and horizontal jumps; create a path that the child has to cross by jumping on both or single foot.
  - Expose the children to general water activities and swimming in particular.
  - Expose them to special activities such as rollerblades, slides, ice skating and also cycling and more.

FUNdamentals:

Boys aged 6-9
Girls aged 6-8

- At these ages, boys and girls must participate in a variety of structured activities in order to develop basic skills. The activities should be based on enjoyment and fun with minimal competitive activity.
  The goal: to learn all the basic movement skills and build athletic ability.

- This is a critical stage for the development of basic mobility, with general basic skills. As mentioned above, this is a stage where there is a "window of opportunity" for elementary physical abilities: balance, flexibility, coordination, agility and speed.

- Learning and practicing skills for children at these ages is achieved in the best way through a combination of unstructured games in a safe and challenging environment, while being properly led by teachers, coaches and instructors with knowledge of leisure activities within the framework of formal and informal education.
- Skills development should be fun and well structured, while setting applicable goals that guarantee success but still challenge the children.
- Create a wide variety of sports, while learning basic movement skills.
- Physical components which mentioned above will be worked through fun games and activities, not through a tough training regimen.
- Encouraged to take part in activities based on contrasts or complements: water versus land, individual vs team sports, etc.
- Children at these age should be taught to developing the cognitive aspect – to 'read' the movements around them and to make decisions accordingly. It is extremely important to encourage independent problem solving with minimal guidance, in order to develop the child's strategic-motor thinking.

Highlights:

- Children in this age group do not need to specialize in one sport.
  Even if they have a favorite sport that they do twice a week, they should take part in other sports at least 3 to 4 times a week.
- Using age-appropriate equipment in terms of shape, size and weight makes learning activities much more enjoyable, efficient and safe. Sometimes it is possible to rent equipment. For example, children with disabilities who need professional sports equipment.

Basic movement activities with general basic skills:

- Children should be encouraged to engage in unstructured physical games every day, regardless of the weather.
  Games should be dynamic, including passing and catching skills, running, changes of direction and more.
  Games also should be physically demanding, with participation of genders.
- Parents (in coordination with the teachers/coaches) must create quality opportunities within the school hours, so that the activity will take place for about 150 minutes a week divided into 5 activity days of 30 days (more is possible).
- Do not focus on results. At this age, the activities plan do not include competitions or result records. The focus is to learn and enjoy, not winning or achieving a certain result.
- Common myth – early specialization in sport (e.g football or basketball) will lead to better performance in future's sports career.
- General development of athletic ability is much more beneficial in the future. However, some sports (such as gymnastics, figure skating, etc.), require prior specialization.

Learn to train:

Boys aged 9-12
Girls aged 8-11

- At the beginning of the growth process (usually around the ages of 11-12), the children are ready for systematic training, but the emphasis should still be on general sports skills. Often, already at this age there are children who are ahead of their development and coaches who tend to train them excessively for a single sport (and also register them to team sports). As already mentioned, this may harm the sport career but also the normal development and even increase the chance of injury and wear and tear.
- Furthermore, many children at this age develop a preference for a certain sport, but this is too early a stage to specialize in sports that require late specialization. The children must still engage in a wide variety of activities, in at least 2-3 different sports. **The goal: learn and practice general sports skills.**
- Besids improving the basic skills, this phase is very important to start and develop specific sports skills with the accelerated development of coordination and fine motor skills. Also, in this phase the children enjoy the process of progress and the improvement of skills during training.
- Competition becomes important, and the child needs to learn to compete, but the focus is not on winning but on getting the best long-term results. Training and competition distribution: 70% practical training and 30% competition.
- This is an important period to work on flexibility.

Highlights

- This is the time to develop all the basic movement skills and learn the sports skills as a whole. The size of the brain approaches that of an adult, and the child is able to perform more complex skills that require sharp movements.
  This phase lasts longer In those who develop relatively late (sexually), which is an advantage for them.

- At this age, children develop clear ideas about the sport they like, and in which they feel they have a good chance of success. Although this should be encouraged, they should not focus on single sport.

Basic movement activity with general basic skills

- The children should continue to be encouraged to engage with their friends, every day, in an unstructured movement game.
- The children should be included in (short) seasonal sports programs and allowed to try different roles in the games. They may discover a certain activity (or role) that they are good at.
- The children should be encouraged to take advantage of every opportunity and engage in a different type of sport that they are not used to – in physical education classes, during breaks, in extracurricular activities and in other settings.
- Make sure that the children practice movements that improve flexibility, speed, endurance and strength. For strengthening they will use their body weight and not heavy weights.

Train to train:

Boys aged 12-16
Girls aged 11-13

This age group usually includes the beginning and end of the growth spurt.
At this point, youth are ready to direct their basic skills to a specific sport and tactics. They will perform at their best to win the competition or the match. However, they should still focus primarily on training and skill improvement – a critical approach for optimal and long-term performance. The parents should be involved and make sure that the association with the coaches will work in a correct ratio between training and competition.

The goal: train to train - training is at the center.

- After the start of the PHV (Peak Height Velocity - time when the peak of growth speed takes place) process, priority should be given to aerobic training while developing skills levels, speed, strength and flexibility.
- Rapid changes in development make it very important to work on coordination.
- Rapid growth of bones, tendons, ligaments and muscles sharpens the need for flexibility training.
- For girls: two windows of opportunity for strength training accelerated adaptation:
  1. Occurs immediately after the PHV,
  2. At the beginning of the menstrual cycle.
  For boys: one window of opportunity, starts 12-18 months after the PHV.
- Aerobic and strength training abilities depend on the maturity of the athlete. Accordingly, timing of aerobic training relies on if maturity occurs early, normal or at a late stage.
- It is necessary to teach the athletes to face the physical and mental challenges of competition. Players should be exposed to competitive situations through training, matches or competitions on a daily basis.
- Focus on training more than competitions. Too many competitions waste very valuable training time and even delay technical/tactical skills and decision making.
- The athlete's talent must be identified in order to help him focus on two sports.
- Phases 3 and 4 (learn and train to train) are the most important phases of the athlete's preparation. In these phases, we make the athlete or break him!

Train to compete:

Boys aged 16-23
Girls aged 13-21

At these age groups things 'get serious'.
Boys and girls can choose to specialize in one type of sport and continue on a competitive path, or switch to a path of leisure activity and engage in it for the rest of their lives.

Recommendations:

- The activity will take place all year round with high intensity.
  In ball sports - focus on a specific role/position and a secondary role.
- The athletes will perform basic and specific skills at a high level, and apply them in a wide variety of conditions during training and in the competitions.
- Competitions preperation should be optimal.
- All programs must be adjusted to level of the athlete: fitness, recovery, psychological and technical programs. These should be adapted as much as possible to the different athletes according to their strengths and weaknesses.
- One sport must be chosen.
- Athlete must be directed to a structured annual training plan (periodization) and follow-up frameworks.
- Competition-training ratio should be modified to 40:60.
  40%: developing technical and tactical skills and improving physical fitness,
  60%: competition and specific competition training.

Train to win:

Boys aged 19+
Girls aged 18+

At these ages, high-level, talented athletes, enter a phase where they can continue with highly intensive training that leads to international success.
Both with high-level talented athletes and with the less talented, it is important to work with international level training methods and to offer facilities and equipment that meet the demands of the sport and the athlete.

Recommendations:

- Train the athletes for major competitions.
- The training is characterized in high intensity and high volume.
- Allow recovery in accordance with the training program and annual phase to prevent physical and mental burnout.
- Change the competition/training ratio to 75:25.
  Training will include specific competition activities.

Active for life

Young athletes may enter this phase at any age.
According to the L.T.A.D model, children who were exposed to sports activities in the right way, meaning they have progressed through the mentioned stages, will have improved motor skills, self-confidence and motivation to continue to remain active in almost any sport they like. They may choose to engage it as amatures or to be involved in sports as different roles (referees, coaches, managers, etc.). They may also try new sports activities such as switching from basketball to volleyball or tennis and more.

An example of a long term athlete development (L.T.A.D)

The L.T.A.D model was developed in Canada on a research basis and has been adopted by many countries such as UK, New Zealand, Northern Ireland and more.
The model is based on the fact that in the early stages of the child-athlete's development, the sports development programs will revolve around the critical and sensitive periods of the child's adaptation to physical activity, in what is defined as a "window of opportunity". During these periods the children are ready and able to absorb basic sports skills and abilities such as running, jumping and throwing. They can even improve their speed, agility and balance - elements related to sports skills, which will also be used in other sports. Children who do not develop their basic motor skills by the age of 12 may not fulfill their maximum athletic and technical potential
(*The age varies from child to child).

The need for change and adoption of the plan will be demosntrated in two ways:

1. Existing negatives effects, before the implementation of the plan
2. Presenting the advantages of using the plan.

In this review, we will refer to both, since understanding wrong actions in the process is important as well as presenting the detailed plan.

As mentioned, a long-term model for the development and nurturing of the athlete is designed to prevent the phenomena mentioned above. The basis is to enjoy from the activity while learning to the needs of the child and his age.

The L.T.A.D program is translated in many countries into seven stages, as shown in the table below (Table 2).

From professional principles to specific sport

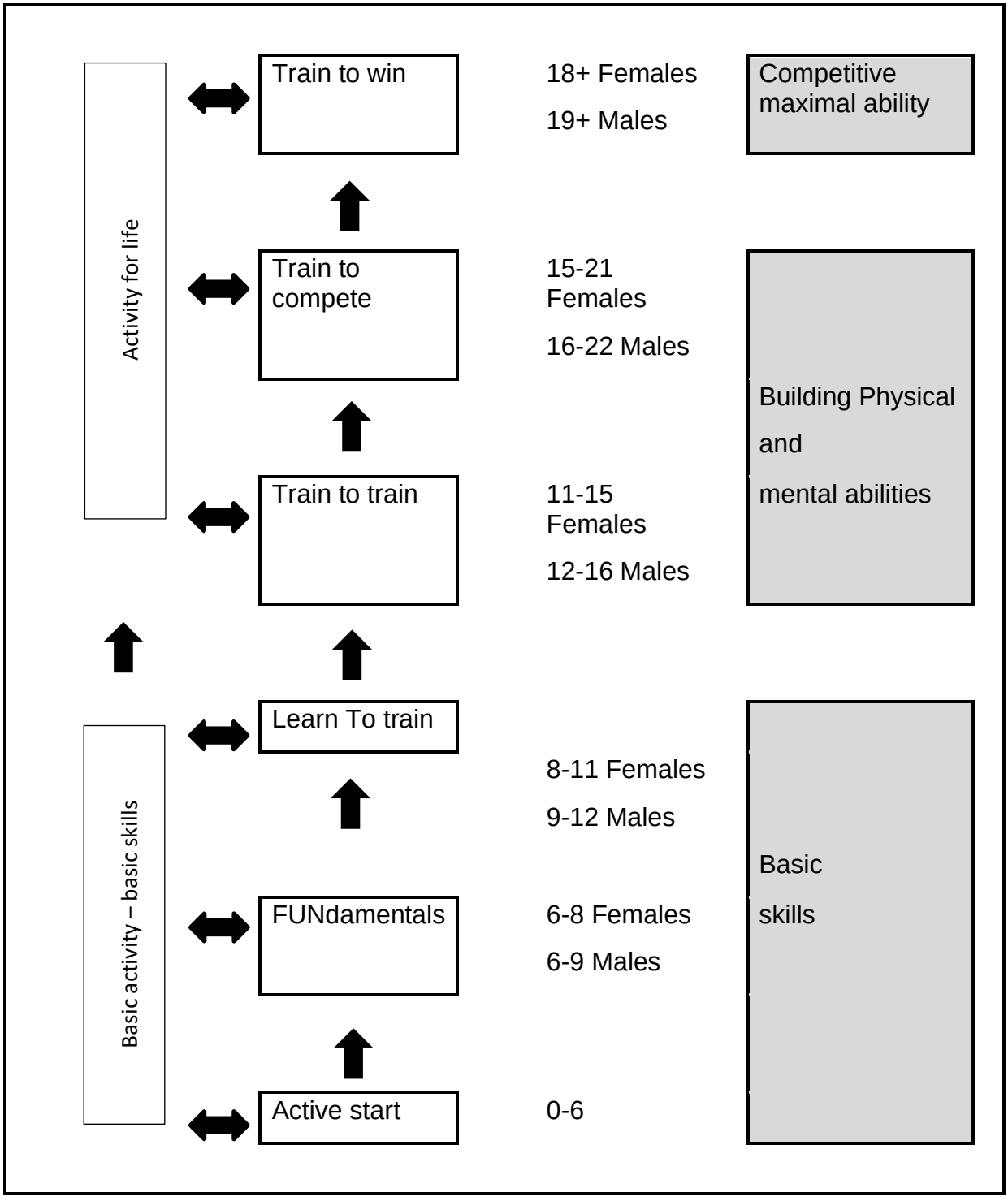
The second part of this booklet includes the professional aspects in basketball sport. With the goal of creatinng experiences that will remain with the athletes for the rest of their lives.

Table 2: L.T.A.D model

Phase	Age	Activities
1. Active start	0-6	Basic movements and applying them during games
1. FUNdamentals	Males: 6-9 Females: 6-8	Basic movement, skills and physical abilties
2. Learn To train	Males: 9-12 Females: 8-11	Skills from several sports
3. Train to train	Males: 12-16 Females: 11-15	Build physical ability: aerobic basis, speed, strength. Develop skills in the chosen sport (or two sports)
4. Train to compete	Males: 16-23 Females: 15-21	Ideally prepare the body physically and professionally
5. Train to win	Males: 19+ Females: 18+	Competitive abilities
6. Active for life	Any age	Transition from competitive framework to physical activity for life

During each of the stage, there may be a transition between amateur and competitive activity. This transition happens for many reasons: late maturity, desire or unwillingness to compete or invest in the sport, etc.

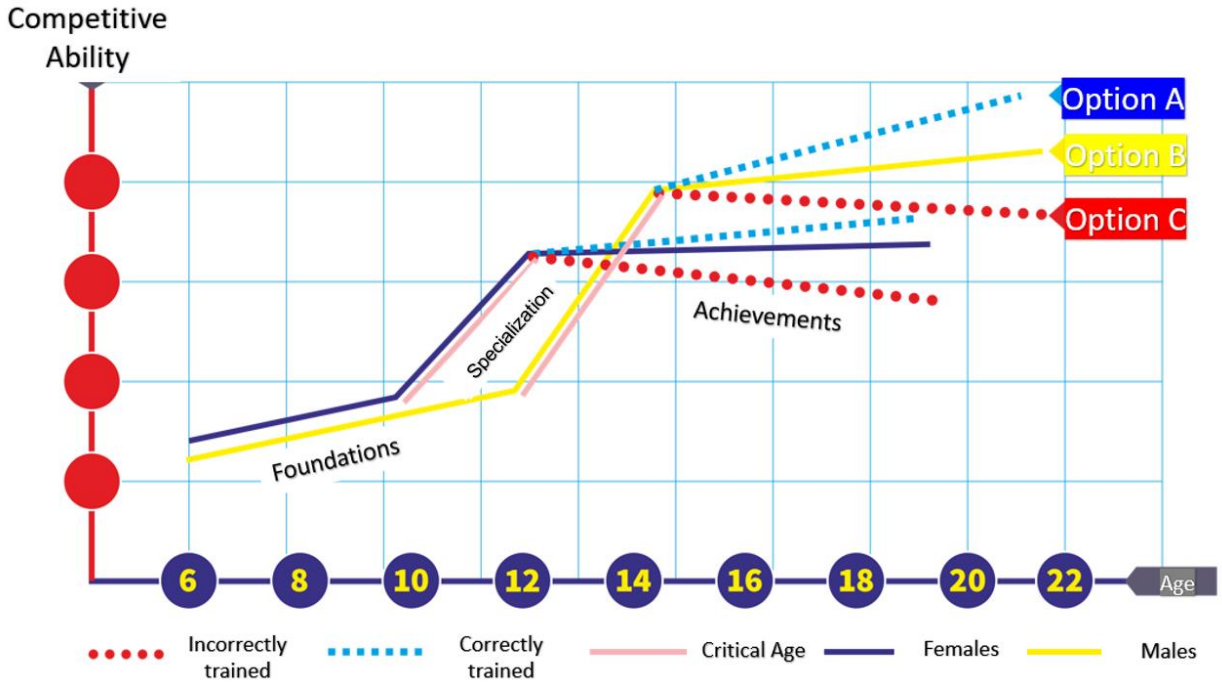
Table 3: Development model and the two-way transition to life activity



Summary and analysis of youth scouting, preparation and matches schedule

First, we will examine how children develop towards adolescence

Biological development of the young actor:



- **Option A**: Continued development and maximized competitive ability in adulthood.
- **Option B**: "Glass ceiling" stagnation and inability to fulfill competitive ability in adulthood.
- **Option C**: Deterioration or retirement at adulthood.

Ways and means of youth scouting:

- Scouting talented young people in the basketball sports
- Scouting young talents during physical education classes in schools
- Scouting talented young people in the school championships
- Scouting sports events in the various branches within the schools
- Scouting talents during community activities in neighborhoods
- Scouting in other sports
- Performinng tests for the purpose of scouting and sorting talents
- Managing tournaments between the schools / associations / neighborhoods
- Running tournaments between regional teams / excellence centers / national and international frameworks.

European youth basketball game rules ("Kat-sal" in israel)

Country		Basket height		Ball size	Number of players		Match duration
age		U10	U12		U10	U12	minutes*parts
Germany		2.6	2.6	5	4X4	4X4	8X5
Greece		2.6	3.05	5	4X4	5X5	8X6
Italy		2.6	3.05	5	4X4	5X5	6X6
Lithunia		3.05	3.05	5	5X5	5X5	10X4
Spain	Madrid	2.6	2.6	5	5X5	5X5	6X8
	Barcelona	2.6	2.6	5	5X5	5X5	8X6
Turkey		3.05	3.05	5	5X5	5X5	10X4
Switzerland		2.6	3.05	5	4X4	5X5	5*6>4*8 (U12)
Czech		2.6	2.6	5	4X4	5X5	8X4
Israel		2.6	3.05	5	5X5	5X5	8X5

Optimal recommendations for a game program for children / girls within the basketball departments

Age	Basket height	Ball size	Number of players	Match duration	Number of matches
8U	2.6	5	3X3	4* 5 minutes	20 (2/3 in tournaments&friendlies)
10U	2.6	5	4X4	4* 6 minutes	20 (2/3 in tournaments&friendlies)
12U	3.05	5	5X5	4* 7 minutes	24 (50% in tournaments&friendlies)
14U	3.05	6	5X5	4* 8 minutes	28 (50% in tournaments&friendlies)

It is extremely important to consider game methods at young age, and also the message that is conveyed to children in the way the game is managed

Different ages require different approach to the competition.
The youth coach does not compete but he selects the competitors!

Vision of Israel Basketball Association:

A well-organized and managed professional system that scouts and nurtures talents to a high international level.

Goals of the Israel Basketball Association:

- Scouting the most talented players in Israel and integrate them in the national teams
- Cultivation and promotion of professional, educational, cultural and social of young players, according to methodical, biological, educational and cultural principles
- Training as many players as possible, to represent the country, and include them in various national teams and professional leagues in Israel and abroad

Goals and means for realizing the goals:

- Establishing academies to cultivate talented young players from the periphery, which also includes accommodation options (financial, social, cultural and educational)
- Upgrading training facilities - courts for training and matches, locker rooms, rooms for physical fitness, coordination, treatment rooms, physical rehab and recovery.
- Players integration in training camps and tournaments in Israel and abroad for youth divisions and national teams
- Cultivate and promote youth departments staff through training courses and seminars and providing professional materials and employing full-time professionals

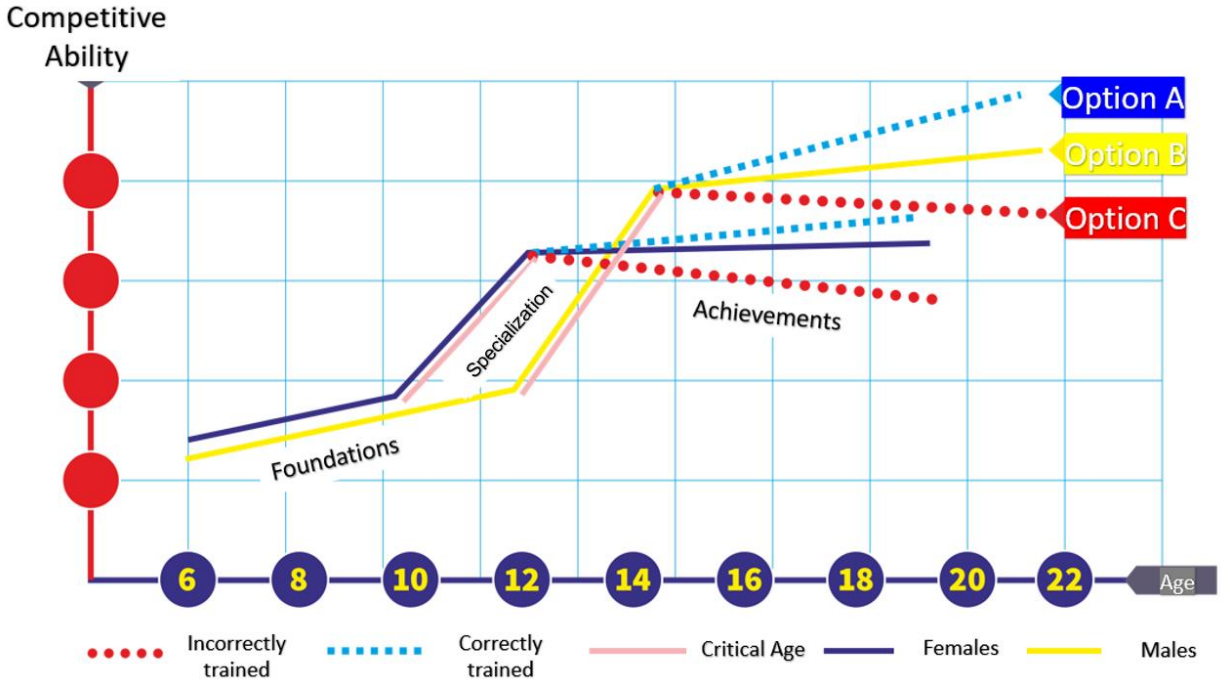
The biological development of the young player

(and its affects on competitive sports)

The biological development of the young player continues until the age of 18. At the age of 13–15 (boys) and 10–13 (girls) there is an accelerated development of the physical, mental and anthropometric (such as height, weight and muscle mass) values.This period is significant in regards to different loads of training, competitions, matches and for the improving coordination and learning technique.

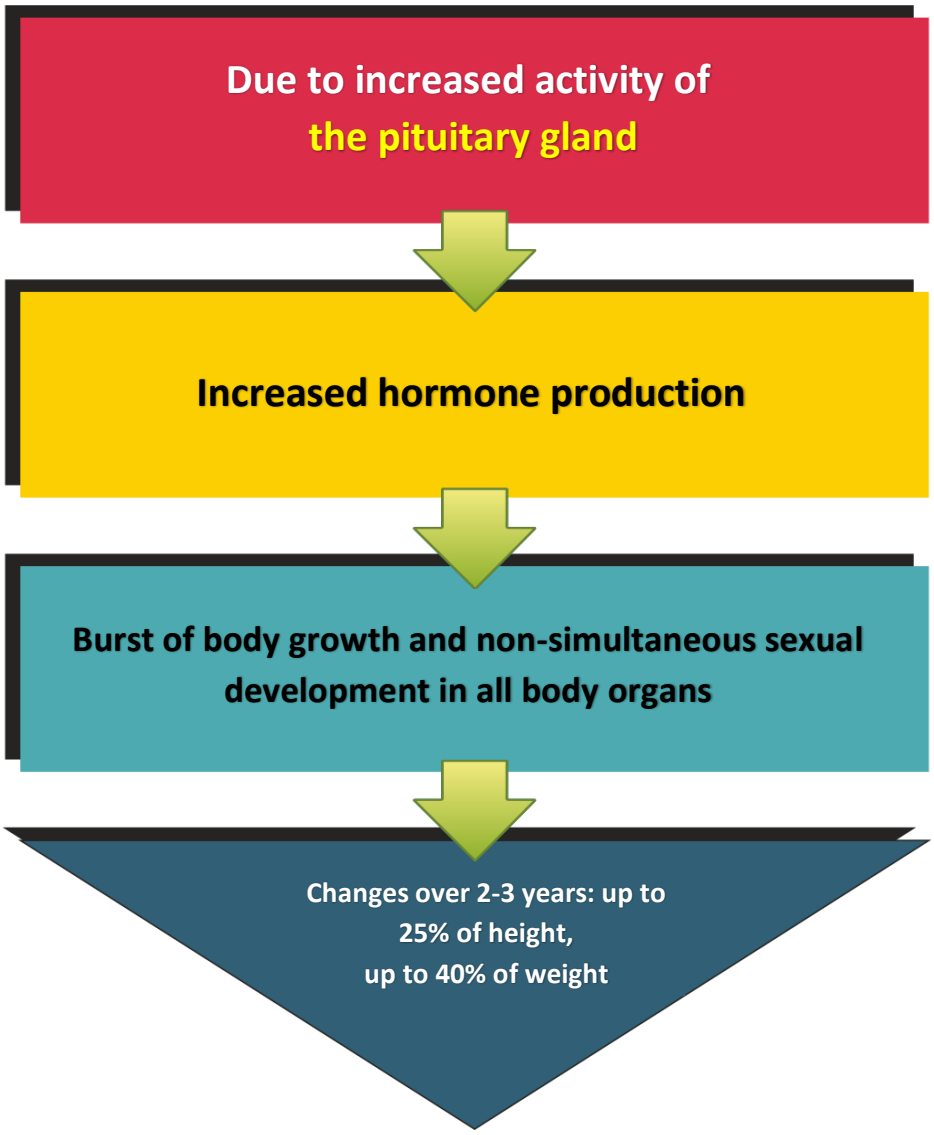
At the age of 6–13 (boys) and 6–10 (girls) there is a moderate increase in all values with a slow and gradual development. During this period, a diverse physical, mental and coordinative activity is required.

Enters the framework at age 6 ⟹ moderate development up to age 12
at age 12/13 up to 16 ⟹ accelerated development
after age 18 a transition to high competitive level with ability's exhaustion or stagnation to withdrawal.



- **Option A**: Continued development and maximized competitive ability in adulthood.
- **Option B**: "Glass ceiling" stagnation and inability to fulfill competitive ability in adulthood.
- **Option C**: Deterioration or retirement at adulthood.

First, lets observe how boys and girls develop at youth



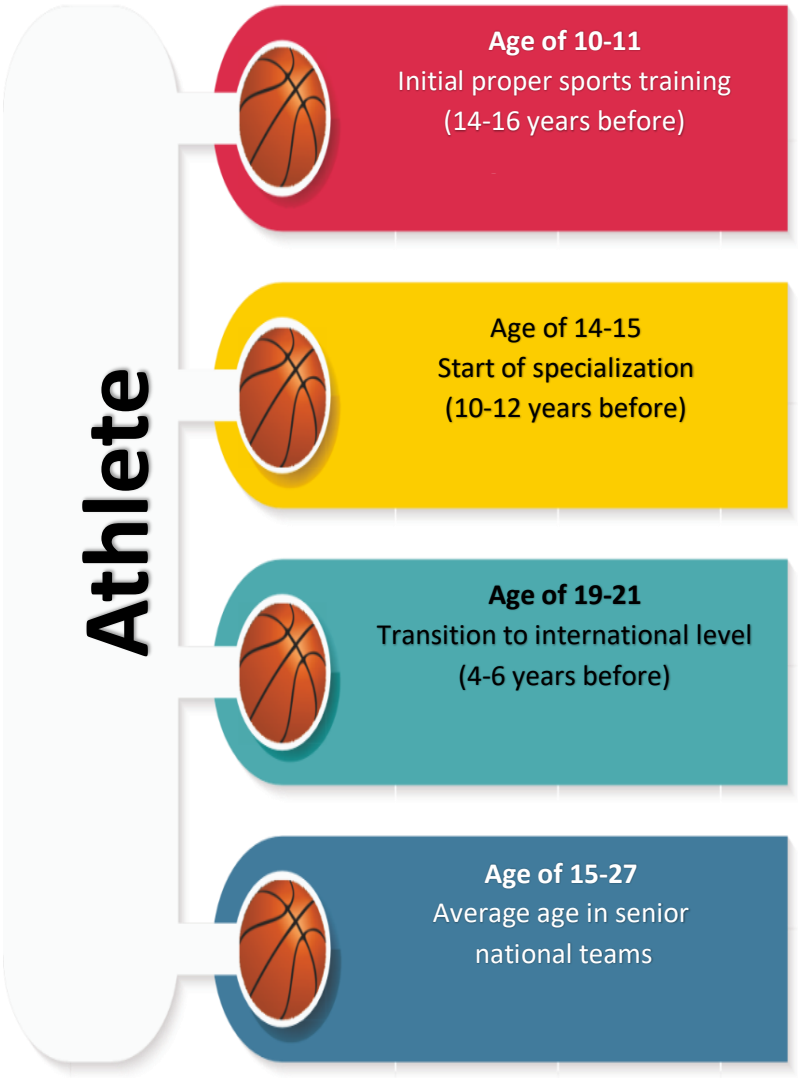
Anthropometric and physiological differences between genders

	Boys	Girls
Age of highest growth rate	13.4 (13-16)	11.4 (10-13)
Age of final height	18	16
Age of peak weight gain	14.5	12.5
Muscle % during birth	25%	20%
Muscle % of an adult	50% (Male sex hormone)	40%
Age of peak muscle % growth	18-25	16-20
Fat % during birth	10-12%	Slightly higher
Fat % of an adolescence	15%	25% Estrogen (female hormone)
Fat % of an adult athlete	8-12%	15-22%
VO2Max during adolescence (ml/kg/minute)	44	40
	In adults: decreases by 1% every year	
In adolescence: rises from 1.2L to 2.7 between age of 6 to 12	Doubles from age of 6 to 12 from 1.2L to 2.7L	15-20% less than boys

Initial muscle mass 0.8 kg (25% of bodyweight)	
Age 13-14	40% of bodyweight
Age 17-19	40-50% of bodyweight

Initial fat mass: 12-15%	
Age 13-14	15%
Age 17-19	8-20%

Ideal development of a competitive athlete



The process of scouting and training the young athlete

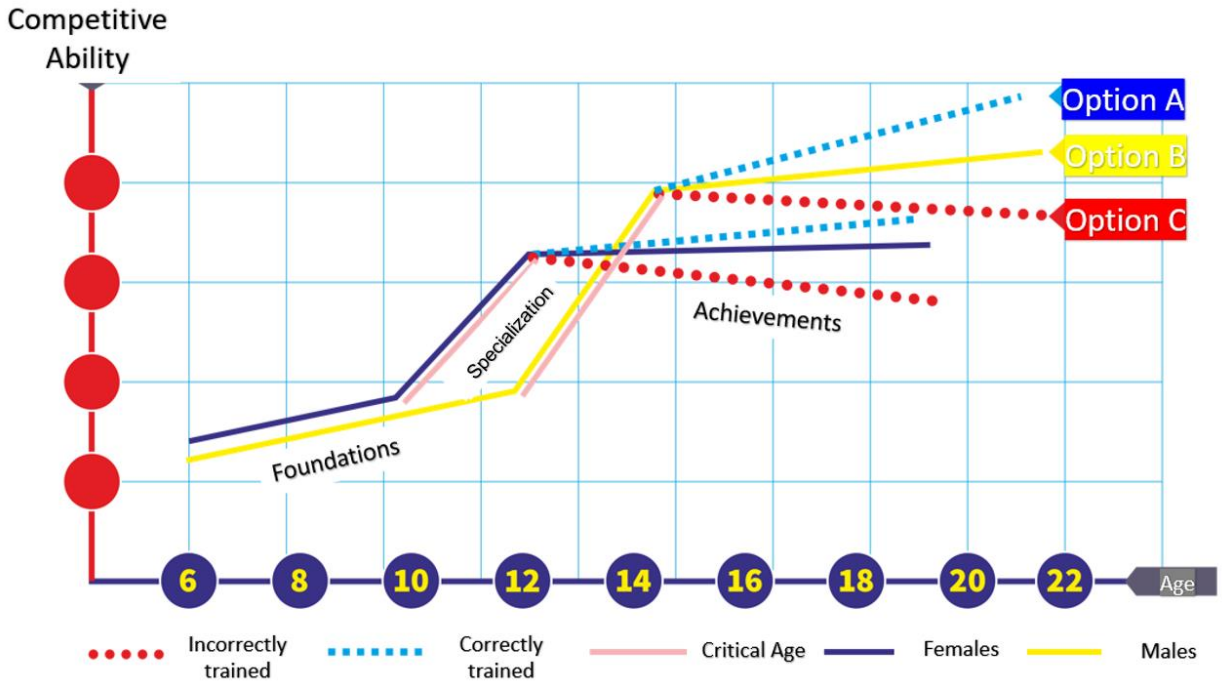
What is a correct training process?

The training of a young athlete lasts around 13 years at the ages of 6–19. The process includes three periods of training (and competitions):

- Foundations - 6–11: based on versatile training
- Specialization - 12–15: From general and versatile to specific training
- Specialization for achievements - 16–19

After the specialization for achievements period, the player starts his sports career, which may be a "competitive" (local competitions) or "achieving-representative" - career (national level or higher). This period may last 10–15 years, and its success depends a lot on previous training, at a young age.

The following diagram shows the three periods in the player's training: basics (6–11), specialization (12–15) and specialization for achievement (16–19).
The diagram demonstrates the difference between a player who underwent various training at a young age, improved his ability and also continued to improve even after the age of 18 (marked with a dashed line), compared to the athlete who did not undergo such training, and whose development was stagnated at the age of 16 (continuous line) or regressed (dots). Further explanation of diagram is given in chapter of bilogical development.



Specialization period (12-15)

After a learning a diverse base of athletic abilities, the player transition to specialization period with more specific training. The period includes physical fitness components such as strength, speed and tactical training. It is recommended to perform 9–10 hours of formal activity per week at this distribution:

- 50% - technique, tactics
- 25%–30% - general and specific physical fitness
- 10%–15% - coordination and various enrichment activities (other sports)
- 5%–10% - theoretical study (rules, technique & tactic analysis, healthy lifestyle, nutrition, etc.)

Additional 4–5 hours of non team related physical activity must be added.

Specialization for achievements period (16–19)

Volume, intensity and content of the loading:
During this period the player goes through a process of training and competitions at a competitive level (national followed by an international), which is affecting the scope and intensity of the training.

During this period, the specific training of physical fitness, technique and tactics components is crucial. The main goal of the training process is to increase the intensity and quality of the training. Meeting the goal is only possible if loading is carried out correctly, as illustrated in table 3 in the next page. The figure shows the relationship between the volume and intensity of the loading at the ages of 6-19. At 6-13, the loading should be relatively large, but at a low intensity and with short recovery. At 13-19, the athlete should already be able to work with greater intensities, but the volume should be smaller with longer recovery.

Table 3 shows that at a young age it is possible to carry out loads with large volume, low intensity and short recovery, while at an adult age the loads volume are smaller, with a high intensity and with longer recovery. In terms of the number of hours, we can certainly increase the training hours at a young age. Unfortunately, with time, physical education classes in the schools and the "street" activity have decreased significantly, so the activity can be planned according to the following principles:

Age	Loads	Volume	Intensity	Recovery
8-12	Diverse	Larger	Small	Short
13-19	Specific	Smaller	Large	long

Principles of loading in children and adolescents

Due to significant changes in the volume and content of youth activities, the coach needs include more enriching physical activity in the training process. The activity should include a wide variety of activities beyond the specific training that the athlete has in the team.

In the modern era there is a paradox:
Physical, mental, technical and tactical requirements in modern sports have greatly increased, but on the other hand, there is a significant decrease in physical activity at a young age, so that the athlete reaches adulthood without sufficient physical-coordinative foundations.

Children aged 8–12 can pariticipate in many hours of daily physical activity, while adults, perform high intensity specific activities with smaller volume.

Optimal hours by age

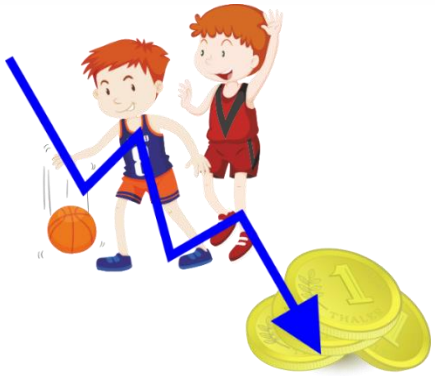
Age	Weekly Hours
8	20
10	18
12	16
14	14
16	14
18+	10-14

Children's ability to perform in high intensity		
Age	**Duration of high intensity activity**	**Required recovery**
5-8	9-11m	12-14m
9-11	6-9m	2-2.5m
12-14	15-18m	5-6m

Data on young athletes

According to DOSB in Germany (2010):
In European countries, 10%–15% of youth who played sports and football, continued to adult career.
According to Management Of Israeli Sports (2015):
In Israel, out of 160,000 U-12 active children, only 40% remain at U13–14, and 50% of those, remain in U16-17.

In Israel, a relative success is observed
at the ages of 13–16,
while in adults, a large deterioration occurs.



High percentage of successful athletes have low socio-economic background

Advantages of children from the low-income status (socially or geographically):

Possible reasons for achievements stagnation and early retirement of successful and promising young athletes:

Physical activity volume in the modern era

In the modern era there is a paradox – while the requirements of physical, mental, technical and tactical performance in competitive sports have increased greatly, there is a significant decrease in the average physical activity at a young age, despite children are able to participate in many hours of various daily physical activity.

Heinz Werner, a german national football coach, presented alarming data in 2008 as part of coaches training course at Wingate College. The data came from a study conducted in the United States (2005). According to Werner, when comparing hours of daily activity between different countries and population types in the past vs modern era, nowadays a 15-year-old boy performs 15 minutes of physical-sports activity compared to 4–6 hours in the past. This minor engagement in activity is also evident when comparing to modern young boys in low income areas and countries in Africa, Asia and South America, where they are active for several hours a day.

Daily activity hours in different types of activity among 15-year-old boys and girls in different populations - nowadays vs the past:

Type / Era	Sports	Movement	Standing	Sitting	Lying
Modern era	15 minutes	1 hour	5 hours	9 hours	9 hours
In the past/ Low income areas	4-6 hours	3 hours	2 hours	6 hours	8 hours

When combining the lack of activity hours with the inappropriate activities by the coaches, it can be understood that many athletes become adults without a sufficient physical-coordinative base, which leads to difficulties in meeting the required physical loads that increase with age.

In addition, we must consider the poor coordination and physical activity in the modern era, which requires the coaches and the system to make significant improvements in enrichment and training content.

Lack of youth international experience

An example:

Type of sport	19 years old Belgium athlete	19 years old Israeli athlete
Football and Basketball	100 international matches (club tournaments)	0-10 matches
Field and track	30 international competitions	1-6 international competitions
Judo	100 international battles	10-30 international battles

Additional reasons for stagnation in achievements and early retirement

A. Youth departments have constant pressure for short term success, by the coaches, parents and the entire system. The competition/matches program dictated by the association and the requirements determined by sports organizations (for example, achievements as an applying condition for Israeli Defence Force) aim to fulfiil potential abilities as soon as possible, preventing optimal development for higher achievements and results as adults.
As a result, scouting of athletes is also performed in short-term considerations. Children are selected if they are able to bring success immediately, instead of selecting children who have the potential that with a proper training process, may bring higher achievements in the long term.

B. A phenomenon **of euphoria and superlative for young individual and teams** successes. Fame and glory lead the young athlete and his environment to a "minefield" that prevents effort, struggle and motivation which are important for future success.

C. **Competitions and matches program is not coordinated** and sometimes creates a conflict between two organizations (between schools assosications or international team and the club).

Optimal situation and comparison with European countries (vs Israel)

	Age 16-19	Age 13-15
Matches per year	36-40	24-30
Club's tournaments per year	2-3 (0-1)	3-4 (0-1)
Clubs' international matches per year	4-10 (1–0)	5-2 (0)
International team matches per year	12-20 (4-6)	5-10 (0-1)
Matches period duration	10-11 Months	9-10 Months

Coach's mistakes in youth traininng

- Replication of adults aspirations and targets
- Overtraining
- Overtraining specific exercises
- Emphasing a lot of tactics
- Inhibits creativity
- Wrong scouting of talented players
- Boring exercises

Possible solutions

Training process for young athletes includes three stages: the first stage occurs up to the age of 11, the second stage occurs at the age of 12–15 years and the third stage is from the age of 16-19.

At the first stage, various-coordinating activities in diverse sports should be increased. For example, a **football player** at these ages should engage in combat sport (judo, karate or other martial arts) and gymnastics. In some cases, the coaches fear from fatigue, therefore preventing the players from engaging in another framework. This mistake harms development and especially preventing to fulffil maximal abilities in the future. Another reason is coaches' fear of talented kids to prefer the other sport framework, as they will remain with less talented athletes. Also, situations that prevent young athletes from being active in the mornings (see below) also harm their training and development.

In this age group (up to 11), the athlete must be trained for the types of loads he will have to deal with in the future. For example, he must learn the technique of lifting weights and work with light loads and gradually proceed the next levels with abilities that will allow him to deal with development towards intense training (age 17–19). In order to deal with these tasks, it is recommended to choose physical education teachers with educational abilities, focusing on studying rather than training.

Possible training frameworks

Israeli schools curriculum allows the existence of various training frameworks:

Day boarding schools: Day boarding schools allow daily activities from noon to evening. In addition to studies, education and social and cultural activities, the children are involved in physical activity, general and specific training, and also other sports.

Morning trainings: morning trainings can be performed before school or as part of it. By doing so (especially in the second stage), it is possible to increase the volume of loads, enrich and supply the required contents for the training process.

Training camps: during vacations, training camps allow the children to study, train and participate in tactical and even social and cultural activities (lectures on healthy lifestyle for the young athlete, constitution, good citizenship and more).

These actions, together with non-obligatory competitions, matches and tournaments, make it possible to identify and scout the most talented players and help them reaching their full potential in the future.

Conclusion

The federation, associations and the coaches must avoid harming the young athletes with unappropriate demands. With good will and cooperation between all the parties, it is possible to fulfill the high potential, to scout and train the children in the right way in order to compete in Israeli sports and in participate in international level in the future.

Top level achievements by age and stages

Basketball	
Stage	**Age**
Initial basic training	10-11
Initial specialization	14-15
Transition to competitive level	19-21
Average age in international team	25-27

Football	
Stage	**Age**
Initial basic training	10-11
Initial specialization	14-15
Transition to competitive level	19-21
Average age in international team	26

Windsurfing	
Stage	**Age**
Initial basic training	Men: 13-15 Women: 12-13
Initial specialization	Men: 16-18 Women: 14-16
Transition to competitive level	Men: 22-24 Women: 19-22
Winners average age in spain	2014 Men: 30.6 Women: 28.3 2003 Men: 29 Women: 26.6

Artistic gymnastic	
Stage	**Age**
Initial basic training	5-7
Initial specialization	9-10
Transition to competitive level	14-15
Average age of winning an Olympic medal	19.9

**The will to win is important,
but the will to prepare is vital**

Youth sports training

(Prof. Jelle Jolles, Netherlands, 2021)

- Every child is **curious, initiative and likes challenges**.
- A young brain is **hungry for stimulation, and needs sensory, social, emotional, cognitive and physical stimulation**.
- Child's self-regulation continues to develop throughout childhood and into adulthood, at a **different individual pace** from child to child.
- The young athlete must be given **time to discover his talents** (even a tree that grows slowly can grow to be the tallest of trees).
- The child's **inner motivation** must be strengthened.
- **At a young age the emphases should be on enjoying the sport and love for the sport**, not on achievements. **Until the age of 12, it is recommended not to choose a main sport**.
- **Children will always choose short-term goals**. They have no long-term vision
- At a young age it is important to offer the child a **wide variety of sports activities.**
- The duration of each developmental phase varies from child to child
- Even a child whose development is slow and whose achievements are mediocre, **can become a super athlete**! And the opposite is also true - a child who reaches impressive achievements at a young age will not necessarily become an elite athlete.
- It is better to **divide into groups according to ability and not age.**
- **It is not possible to determine the child's developmental phase through tests.**
- **There is no need to accurately analyze every movement and motor skill in the child**. This may create a negative effect because it is perceived by the child as non-constructive criticism
- While training children, **the child is the one in the center**, not the coach. The coach should see himself as a tool, designed to support the optimal development of the child
- The coach should see the **child/adolescent as a whole**, and consider all aspects of his personality and not just his athletic aspects.
- **Self-assessment and self-feedback** are keys to personal development.
- **Sports and competitions are good for the adolescent's social mind**, they prepare him in a healthy way for an adult social life. By participating in competitions, the teenager learns to appreciate his value.

Recommendations for optimal development of the young footballer:

1. To look at young children differently - childhood is a period of chances and opportunities.
2. During childhood, 4 developmental dimensions must be taken care of properly: physical, cognitive, social and emotional.
3. The young child should be encouraged to build his performance ability.
4. Work with the child on self-regulation and self-knowledge.
5. Work with him on expression, thinking and drawing conclusions.
6. Three phases of puberty must be acknowledged: early, middle and late phase. Each phase requires a different approach.
7. Take care of wide development of skills and abilities.
8. The coach should take on diverse roles in the child's life: coach, supporter, manager, inspirer, mentor and advisor.
9. Schools must create conditions for the development of curiosity in cooperation with parents.
10. The role of the government is to enable the transfer of knowledge, a change of attitude and the creation of suitable conditions.

Developmental differences between genders

During the first three years of their lives, girls develop faster than boys in all areas: motor, language, cognitive and social. They stand, walk and talk faster, and their maturation processes develop earlier. Later on, the rate of development is similar, and from the age of 6, both men and women develop at a different rate. In some areas boys will develop more and in other areas the girls will be more developed.

Around the age of 3, the child learns to distinguish between genders, and for the most part, he wants to join children of his own sex. He learns what interaction is expected of him and imitates his environment.

As far as physical ability, the increase in physical ability is linear only up to the age of 10–11 for girls, and 12–13 for boys. From these ages onwards, the clear differences begin.

Usually, the boys tend to be more active with physical activity that involves contact between the players. The girls do tend to use contact but less than the boys. Girls prefer coordinated movement activities.

Other “free” behaviors such as running in the garden, lying on the floor, etc. is more accepted for boys, while from girls, it is expected to behave in a more refined and appropriate manner that conforms to the rules (of an educational institution).

For example: sitting upright on a chair and raising a finger for permission to speak.

Boys are requested to behave in certain manner regarding physical behavior more than the girls, but obey less.

Physiological and structural differences between genders

The different chromosomal structure of men and women influence greatly on physiological and structural differences between genders since puberty.
While female sex hormones are estrogen and progesterone, the male hormone – testosterone, is low amongst women. This fact is related to the most of the physical abilities components, especially strength.

The height and weight of women are lower compared to men. Heart and lungs dimensions of men are larger, and their pulmonary ventilation is higher than womens, so as the blood volume and hemoglobin concentration (13.7 g/100ml in men vs 8.15 g/100ml in women).

Maximal oxygen consumption:
Difference between women and men is around 50%–60% in liters of oxygen/minute (absolute oxygen), 20%–25% in ml oxygen/kg body weight/minute (relative oxygen to body weight), yet only 10%–15% in ml oxygen/LBM kg per minute (relative oxygen to body weight without fat)

Women's upper body and lower are approximately 50% and 35% weaker than men's (respectively). In women, muscle endurance is 30%–40% lower than men. Muscle strength compared to cross-section size is similar in both genders. Muscle fibres division to red (slow – ST) and white fibers (fast – FT) is similar between genders, but cross-sectional area of the fibers is larger in men, causing an advantage in muscle strength. Men's brain is 9% larger than womens (after calculating body size), but the number of brain cells is equal between genders (in women, cells are more compact).

The female hormone estrogen, is related to females having a wider pelvis, shorter limbs and narrower shoulder structure than. Also, females have a greater carrying angle of the elbows, which is a biomechanical disadvantage in running and throwing.
Adipose tissue in women is double than men. Estrogen is responsible for the excess storage of fat in girls during puberty, while testosterone causes muscular development in boys.

A relatively small muscle mass and a relatively high percentage of fat in the women affect the metabolism at rest and during exercise. In addition, men use energy than women over the same training unit.

At rest, CP-ATP storage is similar between genders. On the other hand, during a short and intense effort, glycolytic process is higher amongs men, contributing to higher levels of lactic acid after performing anaerobic efforts.

Muscle glycogen utilization rate is around 25% higher in men.

Men use 30% more proteins during intensive effort than women.

Women are more flexible than men in most organs of the body, due to a higher level of the relaxin hormone.

Females tend to engage less physical activity males. Also, they choose activities that are traditionally seen as suitable for girls: gymnastics, dance, ballet, aerobic gymnastics with less activities that are currently seen as suitable for both genders such as swimming, tennis and cycling.

Women have a lower pain threshold and they tend to be more emotional about the pain, which is manifested in a higher incidence of chronic pain.

Factors that influence differences between genders

Hereditary factor: affects the differences in weight, pelvic structure, percentage of hemoglobin in the blood and many other factors.

Hormonal factor: Male and females hormones are found in both genders. The difference is in the concentration of these hormones.

Social factor: social pressures have a direct and indirect effect on the avoidance of females from engaging in sports: the fear of appearing "masculine" , and also, there is reluctance towards women with high physical abilities.

Differences between genders during physical performance

Development phases of competitive athlete at a young age:

- Up to age 6–8 in both genders - rate of development is the same
- Up to age 12–13 boys and 10–11 girls - slow and steady development
- Up to age 15–16 boys and 13–14 girls - moderate development
- At the age of 16–17 girls - gradual development and stabilization
- Up to age 17–19 boys - accelerated development

Physical fitness components

In general, in competitive sports, men's performances are 10%–20% higher than women's (except for maximum strength - see below). However, it should be emphasized that the differences between genders are not relevant in competitive sports, since women and men each compete against the same gender.

Ability tests of main fitness components indicate these differences:

Speed (running):

Women are slower than men by 10%. For example: the world record for men's 100 m is 9.58 seconds, while for women is 10.49 seconds - a difference of 9.49%. A similar difference in the world championships over the last decade. Male winner in the last championship was 9.77 seconds and the female's was 10.71 seconds - a difference of 9.62%.

Cardio:

Also in running of endurance sports, the difference is around 10%. Last marathon record for men is 2:03.23 hours and for women 2:15.25, a difference of 9.75%. In the last world championship, the male finisehd in 2:09.51 hours and the female in 2:25.44 hours (12.3%). The differences are also similar in the shorter distances: in the 1,500m run, the world record for men is 3:26.0m and for women 3:50.46m, a difference of 11.18%.

Explosive Force:

The difference between men and women reaches around 20%.
For example, the world record in long jump is 8.95m for men and 7.52m for women (19%). In World Championship of 2013, male winner achieved 8.56m and the female winner 7.01m, a difference of 22%.

Maximum force:

The difference between genders reaches 40%–50%. The world record in weightlifting (in heavy weight) is 263kg for men compared to 190kg for women (38.4%).

Muscle endurance: In women, muscle endurance is lower in 40%–50%.

Flexibility, coordination and movement: women have an advantage over men.

The largest difference between genders is in maximum strength

The difference in speed and explosive power may derive from the strength of the maximum force.
On the other hand, the difference in endurance is related to the fact that women's internal body organs (heart and lungs) are smaller. Other reasons are hereditary, hormonal and traditional-cultural-social factors. However, in recent years, the gaps that existed in the past relating to social and cultural factors are getting smaller.

Differences in brain function between genders

Brain research reveals substantial biochemical differences between men and women in brain function, differences that are inherent from birth, and do not result from environmental influences. On average, the weight of a man's brain is around 1,400 grams and a woman's is 1,200 grams, this does not indicate higher abilities of males but a heavier mass.

Differences in brain function affect the function of genders

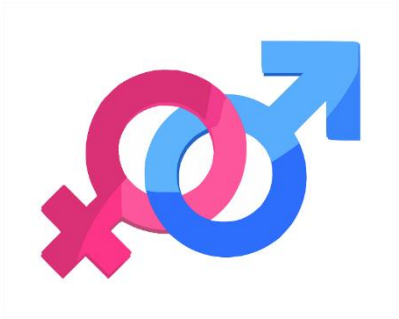
The right part of the women's brain is dominant, in men, the left part is dominant.

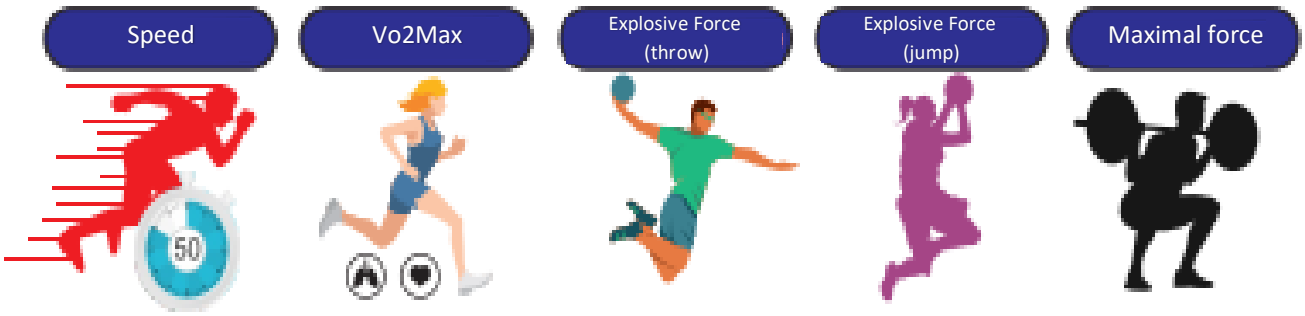
The difference in creativity (right lobe) is evident – it is stronger in women, compared to the logical ability (left lobe) – which is higher in men. For example: when both sexes think about the same question, a different area of the cerebral lobes is activated in each of them.

Due to women's greater ability to focus attention, they are able to perform several actions at the same time, while men are better at performing one task at a time.

Women, compared to men, react emotionally to every stimulus they encounter: they hate, love and develop affection (or aversion) even for details that are not related to emotion.

The verbal part is wider and more developed in the woman's mind, so she is more inclined to conversation and more easily creates a quick and direct connection with her environment.





Men are faster than women in 10%. Explosive force difference is 20% and maximal force is 35-45%

Optimal lifestyle for young athletes

Recovery and regeneration:

Physical efforts cause physiological changes in the body. in fact, after an intense and prolonged exercise, several reactions occur that are similar to a disease state:

- During exercise, children and teenagers can reach an increased heart rate of 220-230 beats per minute.
- Body temperature increases (up to over 40c)
- Increased concentration of lactic acids
- Loss of fluids, risk of dehydration
- Depletion of glycogen stores

Post exercise, the young athlete must regain oxygen and water, since without them, there is no life. 72% of the human body consists of fluids. Loss of 2-3% fluids may cause dehydration.

Exercise may induce 3 types of fatigue

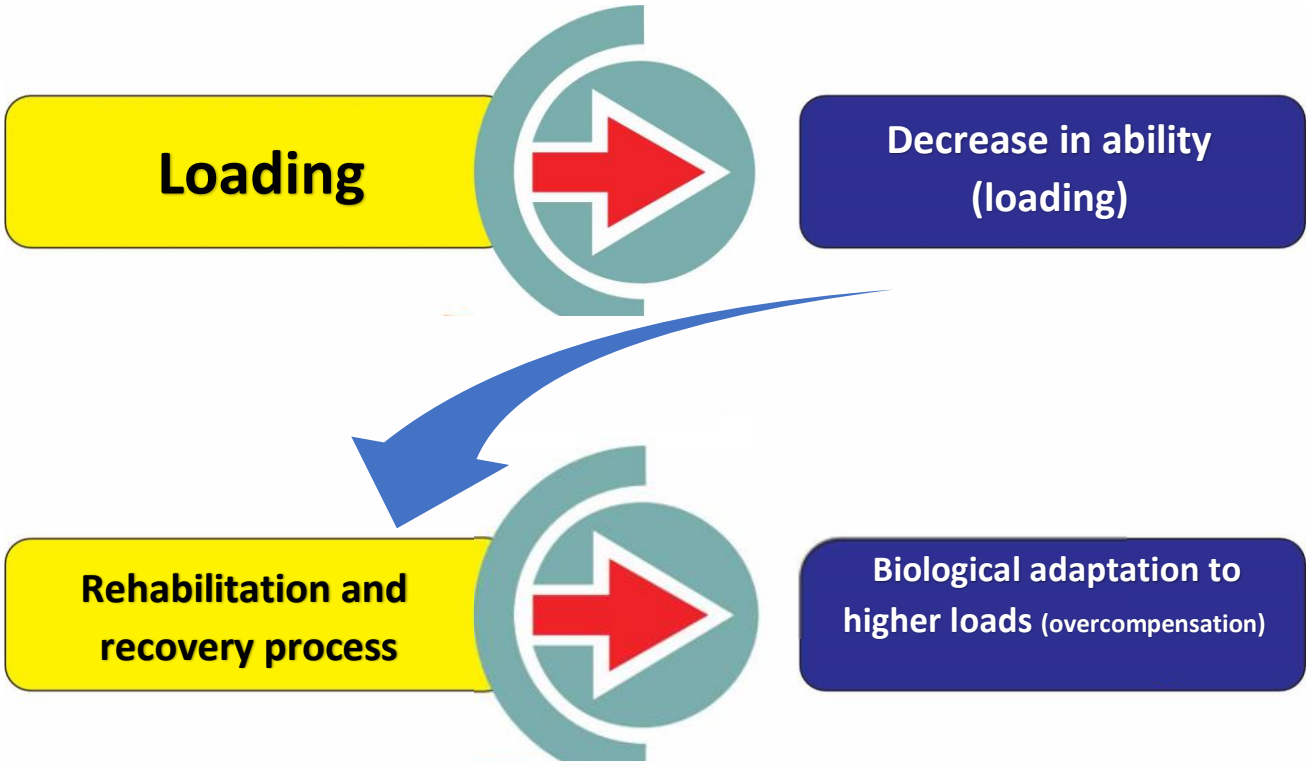
- Excessive muscle fatigue
- Excessive physiological fatigue
- Excessive mental fatigue

Additional injuries might occur, such as willows, ingrown toenails, etc.

The expression for fatigue can be in:

- Pain
- Excessive emotionality
- Lack of motivation
- Depression and agitation
- Restless sleep
- Lack of appetite

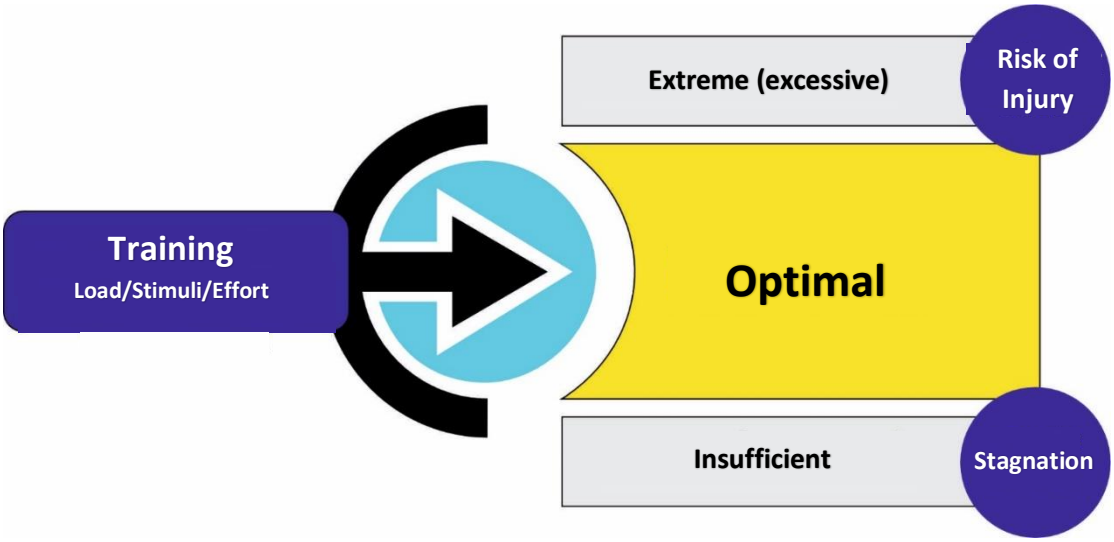
At any age and any situation we should have a positive lifestyle related to nutrition, rest, sleep, clothing, aesthetics and treatment of injuries and diseases. Fatigue after exercise, especially when participating in competitive sports, has physiological and sometimes mental effects that are very similar to diseases. Intense and extreme exercise contributes to an acceleration heart rate, body temperature, higher concentration of lactic acid in the muscles, pain, weakness and depletion of glycogen stores. In competitive sports, fatigue and often exhaustion are an integral part of the athlete's lifestyle, mainly because of the physical and mental effort invested during training, competitions or matches. Therefore, the athlete must adapt his lifestyle to the loads and its effects. Higher loads in training and competitions requires more recovery.



Training Process

Training must be optimal and balanced

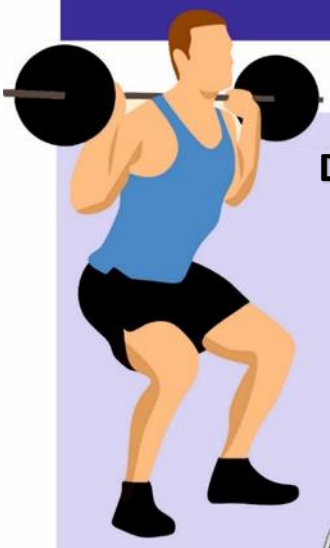
Intense and frequent training may cause injuries and stagnation, but a very low intensity training prevents improvement.



Recovery and regeneration are part of the training and matches program

To reach high level of competitivness and training, the athlete must recover, regenerate and rehabilitate properly.

Imbalance between loads and required recovery, risks the athlete's health, but also the ability to increase loads and performance.



Duration, quality and timing of recovery directly determine the effectiveness of training

Conduct before, during and after training, competition or game

Guidelines for the athlete before the training, game or competition:

- Be prepared physically and mentally for training matches and competitions.
- Repeat the hours of training matches and competitions.
- Repeat the actions you perform before activities: arrival time at the shuttle statio, training facility or the matches.
- Prepare yourself physically: treat health problems, muscle cramps, etc.
- Prepare clothing and food:
  - Training or game outfit
  - Towel and toiletries
  - Extra shirt for replacement
  - Training suit before and after the activity
  - Warm clothing after the activity
  - Eating after the activity
  - Drinking (water or soft drink) before, during and after the activity.

During training, matches and competitions:

- Take advantage of the breaks to consume energy (glycogen) and especially fluids by drinking water (gradually).

- Time breaks, resting on the bench or periods between fights or quarters are an excellent opportunity to restore fluids and recover.

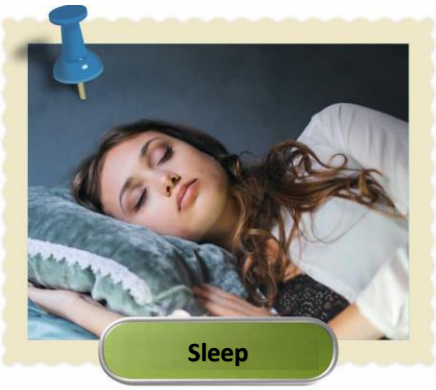
- Healthy and balanced nutrition during the day is just as important as the nutrition during training and competitions. Make sure to eat and drink every 2–3 hours.

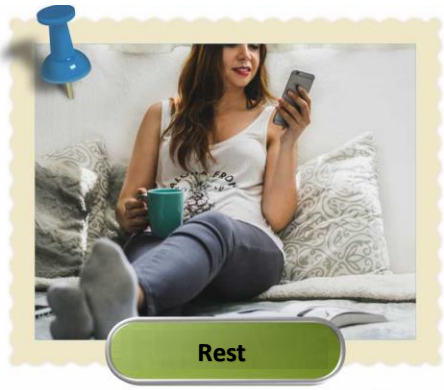
- Prepairing sandwiches and fruits in advance is the best way to provide energy and all the food components needed for training, games and competitions.
  Bring sufficient food according to the time spent away from home.
  Choose the type of food according to the training, match, competition or weather.
  In the summer, choose foods that are more resistant to heat and vice versa.

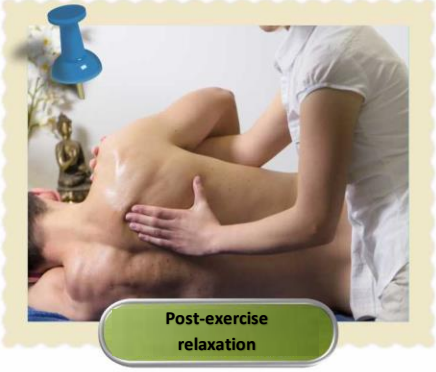
- During rest, wear warm clothing (sweatshirt) and keep your body warm before the next exercise. During longer breaks, change wet clothes with sweat and refresh yourself in a shaded place.

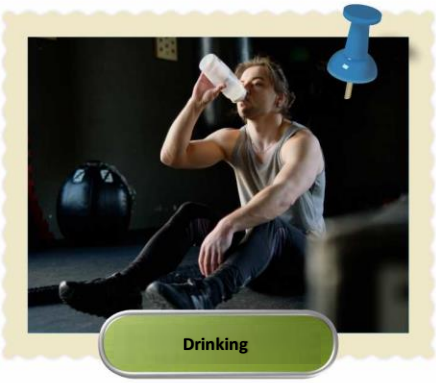
Remember - in order to achieve good results and performance, it is important to follow the rules of rest, nutrition, drinking and aesthetics.

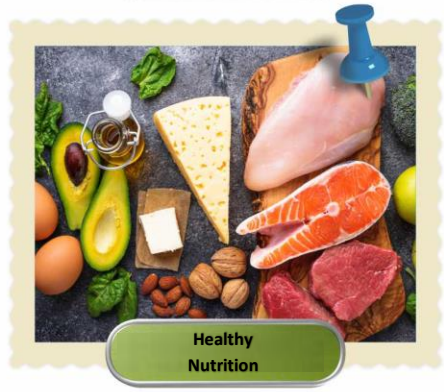
The components of recovery in a correct lifestyle of athletes











Healthy Nutrition

*** This section was written by nutritionist Tali Lok and taken from the booklet "Healthy Lifestyle of the Young Athlete", edited by Yitsik Ben Melech, 2008.**

Nutrition is an integral part of an athlete's life. With proper nutrition, the athlete may control his health and daily functioning, with positive effects on sports performance. When it comes to young athletes, nutrition plan usually does not satisfy their nutritional needs. Most of the time, their nutrition is influenced by habits developed at home, advertisements, social norms, academic stress and various chores.

A nutrition plan that is mainly based on "junk food", irregular meals, skipping meals, insufficient fruits and vegetables, does not provide the young athlete with the appropriate nutritional needs and may cause deficiencies that will prevent reaching potential ability, cause disorders in the growth process and may induce fatigue in matches and training.

A healthy diet should include all types of nutrients: carbohydrates, proteins, fats, water, dietary fiber, vitamins and minerals:

Carbohydrates

Carbohydrates (sugars), are the most available source of energy for humans.
Also, they are considered a main component of the diet. In the human body there is a small storage of carbohydrates called glycogen. The glycogen is found in the liver, muscles and also in a small amount in the kidneys. Glycogen provides energy to the body during physical activity and more. There is a correlation between diet with increased carbohydrates and the ability to perform in sports: a lack of carbohydrates will decrease the athletic ability and the ability to maintain effort over time.

Carbohydrates are divided into:

Simple carbohydrates

- Break down faster, sharpley and quickly raise the blood sugar level.
- Found in white sugar, sweets, etc.
- Eating sweets before training or a match will lead to an increase in the blood sugar level, followed by a decrease that may cause a state of hunger, dizziness, weakness, an additional need for sweets and usually also a decrease in athletic ability.

Complex carbohydrates

- Break down slowler that simple carbs, maintain a balanced blood sugar level throughout the day and provide energy for about three hours after the meal.
- Found in rice, pasta, bread, whole wheat cornflakes, potato, sweet potato, legumes (which also contain a large amount of protein).

Proteins

Proteins are involved in all types of cells creation in the human body.
Athletes need proteins (in combination with carbohydrates) to rebuild the muscle after intense activity. Although athletes need a larger amount of protein than a sedentary, the amount in the daily menu should still be moderate.

Excess protein does not improve strength and may even harm the body.
In general, the healthy should provides the recommended required amount of protein for athletes, so there is no need for supplements. Proteins are digested slowly, that is why meal timing and composition must be planned according to training hours and competitions, so that high-protein food does not disturb the stomach during activity.
Protein sources are meat, chicken, fish, eggs, legumes and dairy products. Plant-based foods cannot be used as a substitute for protein unless a combination of grains and legumes is made. For example, rice and lentils or spaghetti and beans.

Fats

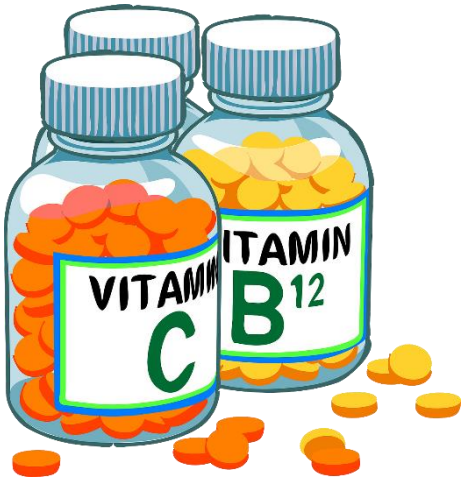
Fats are the largest energy storage of the human body.
Some types of vitamins are absorbed only in the presence of fat, such as beta-carotene that isfound in carrots. In order for the vitamin to be absorbed by the body, the carrot must be eaten with a oil. Healthy and recommended fats are mainly found in plant-based foods such as avocados, olives, nuts, almonds, canola oil, tahini and fish.
Foods such as butter, margarine, cakes, ice creams, dairy products over 5% fat, fatty meats and coconut are not recommended.
In athletes, excessive fat consumption leads to less carbohydrates consumption and weight gain. Eating high-fat foods close to exercise activity has a negative effect on performance, so the athlete should avoid high-fat foods such as fries or high-fat meat before activity.

Vitamins and minerals

Vitamins and minerals in small amounts are important for the body.
They play different roles in the metabolic processes and in various biological processes.
Most vitamins are not made in the body, so they must be obtained from food.
Vitamins and minerals are found in fruits and vegetables, whole grains (bread, pasta, rice, etc.), meat products, cheese and eggs (vitamin B12).

Functions of several vitaminns:

- Vitamin C strengthens the bones
- Vitamin A is important for vision and skin
- Vitamin K causes the blood to clot



Functions of several Minerals:

- Zinc prevents hair loss
- Magnesium participates in muscle contraction processes
- Phosphorus participates with calcium in bone building.

Importance of drinking

The human body consists of 60%–70% liquids.
During exercise our body tends to lose fluids and salts (sodium and potassium) due to increased sweating.
Moreover, the enviornemnt also affect fluids loss: training or playing under hot weather, fluid loss will be greater. An athlete who does not restore the amount of fluids he lost during the activity, may become dehydrated. Dehydration can cause depletion of energy reserves and a decrease in sports performance.
It is important to drink also during the day, and not only during the activity.

Paying attention to the following principles will assist reaching proper saturation:

1. Take a personal drinking bottle with you to school.

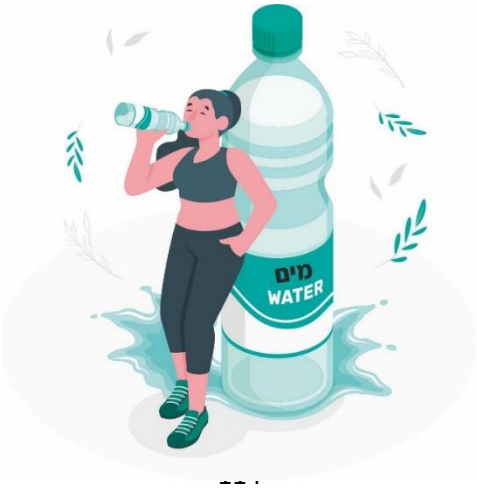
2. Use drinking facilities in the sports club and the changing rooms.

3. Make sure to drink about 2 glasses of water every two to three hours, so you won't have to complete the daily amount of fluids at once.

4. Weighing before and after training/match will be the measure of fluid loss.
The weighing will be done without clothes (avoid weighing the sweat in the clothes).

<u>Drinking during training, matches or competitions</u>

- 2 hours before training/match - 500 ml (2-3 glasses of water)
- 20 minutes before training, match or competition - 250 ml (1 glass of water)
- During training, match or competition - 150-300 ml every 15-20 minutes (total 600-1200 ml).
- After training or a game - based on the weight changes before and after training/match, 150% of the weight lost must be regained.
  For example, if after the activity there is a loss of 1 kg, 1.5L of fluids must be restored.
  Restore fluids in duration of two hours after the activity (not at once).
  It is recommended that each athlete have a personal bottle to avoid "group flu".



Nutrition, development and growth

Adolescence occurs the age of 10–18, and is characterized by rapid growth, development and changes of body structure: boys and girls become men and women. That is why dietary habits, composition of food, timing of meals and the amounts of food the body receives to fulfill its needs are of the utmost importance.

Young athletes are under a relatively heavy physical load, which requires special nutritional planning. The training load during the growth period may create nutritional deficiencies that will lead to impaired maturation, height growth, abnormal bones development , weight loss, weakness, lack of concentration, fatigue during exercise, leading to decreased competitive abilities. Nutritional requirements during adolescence are dictated by three main processes that occur during this period:

- Accelerated growth rate. Occurs in a concentrated period of time frame (1-2 years) and initiates individually. In girls, usually occurs at the age of 10–12, in in boys at the age of 13–15. The rapid growth during adolescence is characterized by an increase in height, muscle and fat tissues and weight gain.

- Additional energy (calories). The accelerated addition of body tissues requires additional energy of food and a larger amount of proteins and minerals - calcium, iron and zinc.

- Healthy and balanced diet. Nutritional deficiency during this period may damage growth. Also, when it comes to young athletes who are under high physical loads, the result of this deficiency may be even more severe if combined with an unbalanced diet, strenuous physical activity and the increased nutritional requirements during adolescence. The nutritional deficiency may lead to irreversible physiological damage and slowing of growth in height.

  In conclusion, healthy and balanced nutrition during the period of accelerated growth is critical for reaching competitive potential and may contribute to the career in the future of the athlete.

Nutrition close to training/match

Healthy nutrition with ideal timing may be the difference between a successful training or match and an inability to perform or recover from them.

Nutrition also affects the progress of improvement. Process of training, even if done correctly and persistently, will not bring the desired results if there is no full synchronization between training and nutrition. It is important to note that the nutrition during the day is just as important as the one close to the training or the match: an athlete who eats properly and timed close to training, but during the day does not follow the rules of the balanced nutrition, will have difficulty reaching achievements and competitive potential.

Carbohydrates are the primary energy source for anaerobic activity (e.g. sprints) and intense aerobic activity. Also, carbohydrates provide energy to the active muscle at a faster rate than proteins or fats.

The carbohydrate reserves (glycogen) in the muscles and liver are affected by dietary habits and physical activity. When these reserves are depleted and there is no supply of carbohydrates from food, there is a drop in the blood sugar level and the athlete may feel weak and tired.

Depletion of glycogen storage occurs in the following situations:

- After an overnight fast of 8–12 hours: the fast empties the glycogen stores in the liver, therefore training or playing without a nutritious breakfast will cause fatigue and weakness at the beginning of the training/match.

- Intense aerobic activity for an hour: this will cause a depletion of 55% of the glycogen reserves.

- Intense aerobic activity for two hours: this will completely deplete the glycogen stores in the liver and muscles. For this reason, it is very important to consume carbohydrates during training or matches lasting more than 1 hour.

Nutritional recommendations for meal planning close to the training/match

Below are the recommendations for eating before, during and after exercise:

Eating before practice/game

Eating before a training/match has several purposes:

- Maintain balanced blood sugar levels and prevent sugar drop and cravings during activities.
- Store maximal amount of carbohydrates in the muscles and liver for energy.
- Provide fluids to prevent dehydration.

Evening training/match

2-3 hours before the exercise (planned at 19:00–21:00) dinner must be eaten, and only after lunch has almost completely digested.
Example for dinner: Sandwich with 5% cheese / cereals with yogurt / yogurt + fruit / bun and yogurt.

15 minutes before the exercise it is recommended to consume additional carbohydrate that digest easily: banana / 3 dates.
When a match is planned, it is recommended to prepare nutrition the night before.

During training/match

As mentioned, intense aerobic activity for two hours will lead to a glycogen depletion of 55%. When performing the same general activity for two hours, glycogen will completely deplete in the liver and in the muscles.

The purpose of this meal is to preserve the glycogen storage in the muscle and to maintain balanced blood sugar levels, since low sugar levels can cause headaches, dizziness and nausea.

Therefore, after an hour of activity, it is recommended to consume carbohydrate such as a banana or an energy bar. It is possible to use half-time break for this snack.

Eating after practice/game

Eating after the training/game is very important for sevral reasons: replenishing the glycogen in the muscles and liver, repairing muscle and tissue damage and for recovery processes of the muscles and tissues for the next activity.

The first meal will be an hour after the activitiy, and it will contain carbohydrates, protein and fluids. For example: sandwich (with 5% cheese / pastrami / egg / tuna) + fruit. Usually this meal will be on the way home, so early preparation is recommended.

The next meal will be up to 2 hours after the activity. This meal contributes to the important processes mentioned above. This meal contains more calories, and usually occurs at home. The meal contains carbohydrates like pasta, rice, cereals and a portion of chicken / turkey / fish meat. If the athlete did not arrive home for this meal, he can eat another sandwich and consume the large meal later.

During intense training, training camp or tournaments, it is important to provide the muscles with available carbohydrate (fruit or energy bar) immediately after the training/match and increase the total of daily carbohydrates.

**Ask not what your teammates can do for you,
Ask what you can do for your teammates.
(Magic Johnson)**

The following tables describe meals planning before, during and after the exercise at different times of the day

Pre-match nutrition - morning

Time of match	Awakening	Breakfast	Breakfast examples	Notes
08:30	06:00	6:30-7:00	Cereal with milk/ cup of yogurt+ fruit/ 5% cheese sandwich+fruit/ bun+yogurt	**Dinner the night before -** pasta/rice/cereals+ chicken/meatballs/fish. **15 minutes before match** - banana/3 dates.
10:00	7:00-7:30	8:00-8:30	Cereal with milk/ cup of yogurt+ fruit/ 5% cheese sandwich+fruit/ bun+yogurt	**Dinner the night before -** pasta/rice/cereals+ chicken/meatballs/fish. **15 minutes before match -** banana/3 dates.

Post-match nutrition - morning

Time of meal	Post-match meal examples	Notes
Up to 1 hour	Sandwich (with 5% cheese/pastrami/egg/tuna) +fruit	Usually this meal is eaten on the way home, prepare it ahead of time
Up to 2 hour	Pasta/rice+ chicken/meatballs/fish	When skipping large meal, eat a sandwich and consume the large meal later
"'	Fruit/energy bar	During intense training/training camp/ tournament

Pre-match nutrition - evening

Time of match	Awakening	Daily routine	Notes
21:00–19:00	**Until 10** **It is possible to take short nap/rest at noon**	**1. Entire breakfast** **2. Meal (e.g. sandwich) every 2-3 hours** **3. Entire lunch 3-4 hours before the match** **4. Additional meal 2-3 hours before the match (cheese sandwich/cereals/yogurt+fruit)**	**Night before match: pasta/rice/cereals+ chicken/meatballs/fish.** **15 minutes before match: banana/3 dates.**

Post-match nutrition - evening

Time of meal	Post-match meal examples	Notes
Up to 1 hour	Sandwich (with 5% cheese/pastrami/egg/tuna) +fruit	Usually this meal is eaten on the way home, prepare it ahead of time
Up to 2 hour	Pasta/rice+ chicken/meatballs/fish	When skipping large meal, eat a sandwich and consume the large meal later
Immediately after match	Fruit/energy bar	During intense training/training camp/ tournament

Nutrition, development and growth

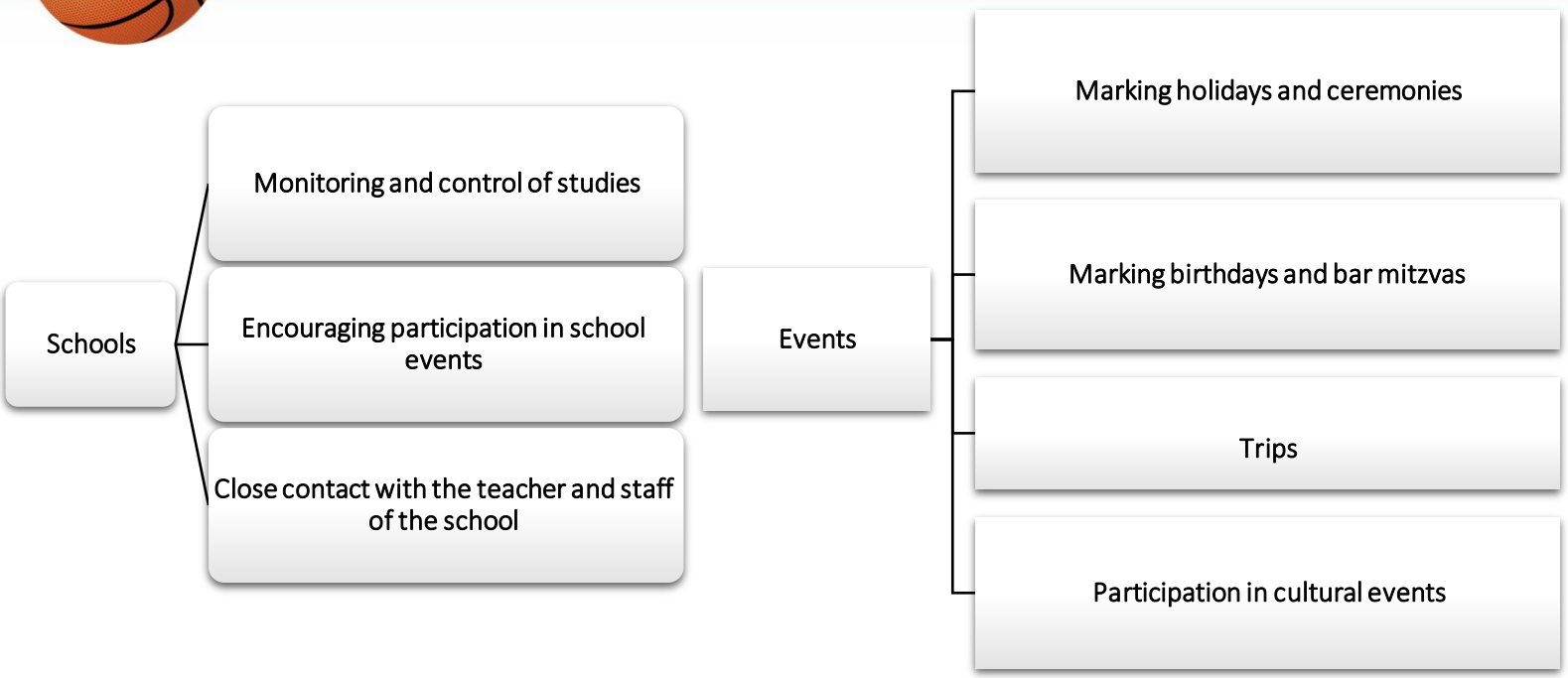
Puberty occurs during the ages of 10-18, and is characterized by rapid growth, development and several changes in body structure: the boy and girl become a man and a woman. Because of these changes. dietary habits, food composition , timing of meals and the amounts of food are crucial. Young athletes are under a relatively heavy physical load, which requires special nutritional consideration. The training load during the growth period may create nutritional deficiencies that will lead to impaired growth in height, abnormal development of the bones, weight loss, weakness, lack of concentration, fatigue during activity and lower sporting performance. The nutritional needs during puberty are dictated by three major processes that occur during this period:

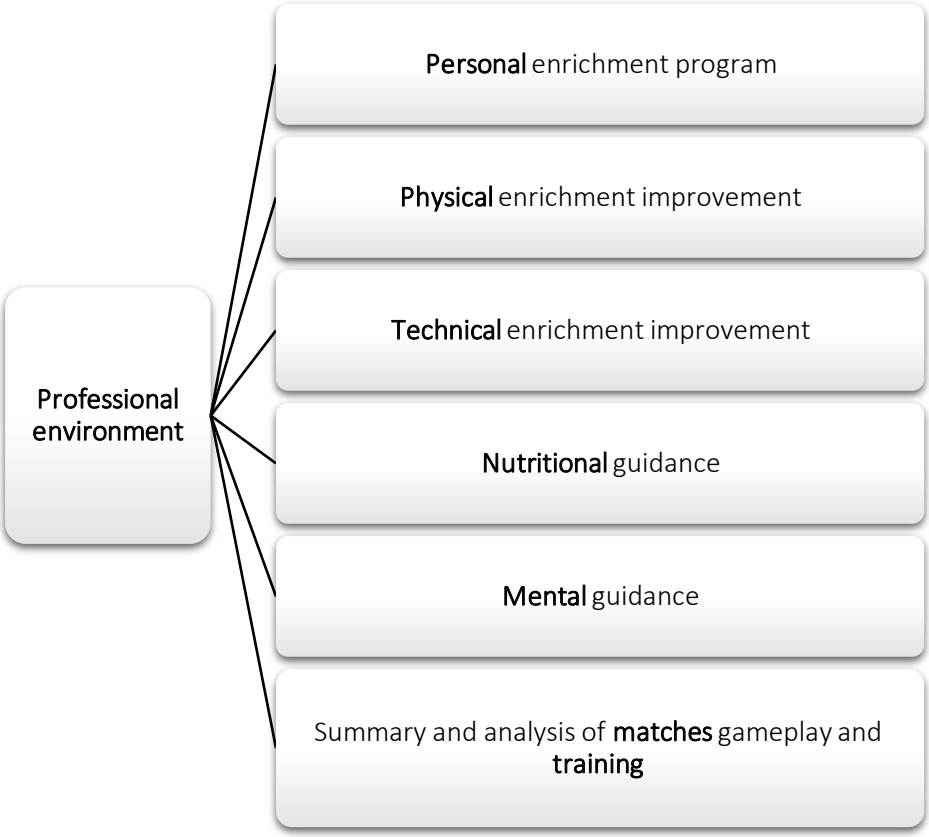
1. Accelerated growth rate.
   The accelerated growth is concentrated in a period of 1-2 years.
   It occurs in every adolescent at a different age. In girls, usually at the age of 10-12 and in boys at the age of 15-13. The rapid growth during adolescence is characterized by an increase in height, muscle, fat tissue and weight gain.
2. Extra energy.
   The accelerated addition of body tissues requires additional energy (calories) with more proteins and minerals - calcium, iron and zinc.
3. Healthy and balanced diet.
   Nutritional deficiency during this period may cause damage to growth. Young athletes who are under high physical load, this deficiency may be even more severe following a combination of an unbalanced diet, intense activity and the increased nutritional requirements during puberty. The nutritional deficiency may lead to irreversible physiological damage and slowing of growth to the point of stopping growth in height.

In conclusion, proper and balanced nutrition during the period of accelerated growth is critical to the realization of the sporting potential and may affect the future of the athlete's career.

Educational-enrichment activities for children, parents and coaches

- Lectures and conversations with parents
  - Nutrition and lifestyle
  - sleep, rest
  - Aesthetics
  - Biological and professional development
  - Mental aspects
  - Using sport for education, social and cultural learning and against crime
- Lectures and conversations with players
  - Healthy lifestyle
  - Nutrition, sleep, aesthetics
  - Importance of training
  - Health
  - Rules
  - Physical fitness, technique, tactics
  - Studies, behaviour, values
  - Mental aspects

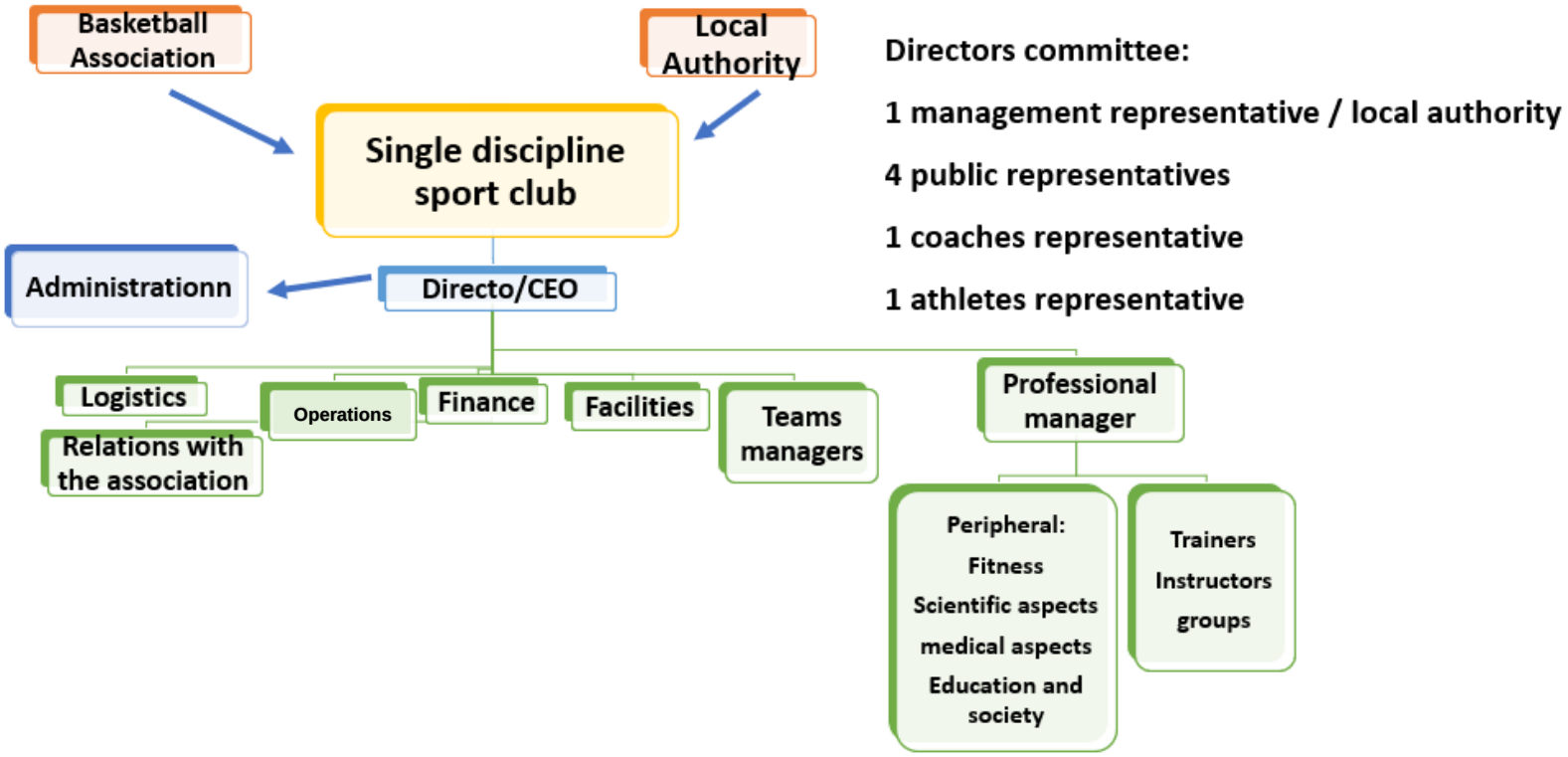

Schools
Monitoring and control of studies
Encouraging participation in school events
Close contact with the teacher and staff of the school
Events
Marking holidays and ceremonies
Marking birthdays and bar mitzvas
Trips
Participation in cultural events

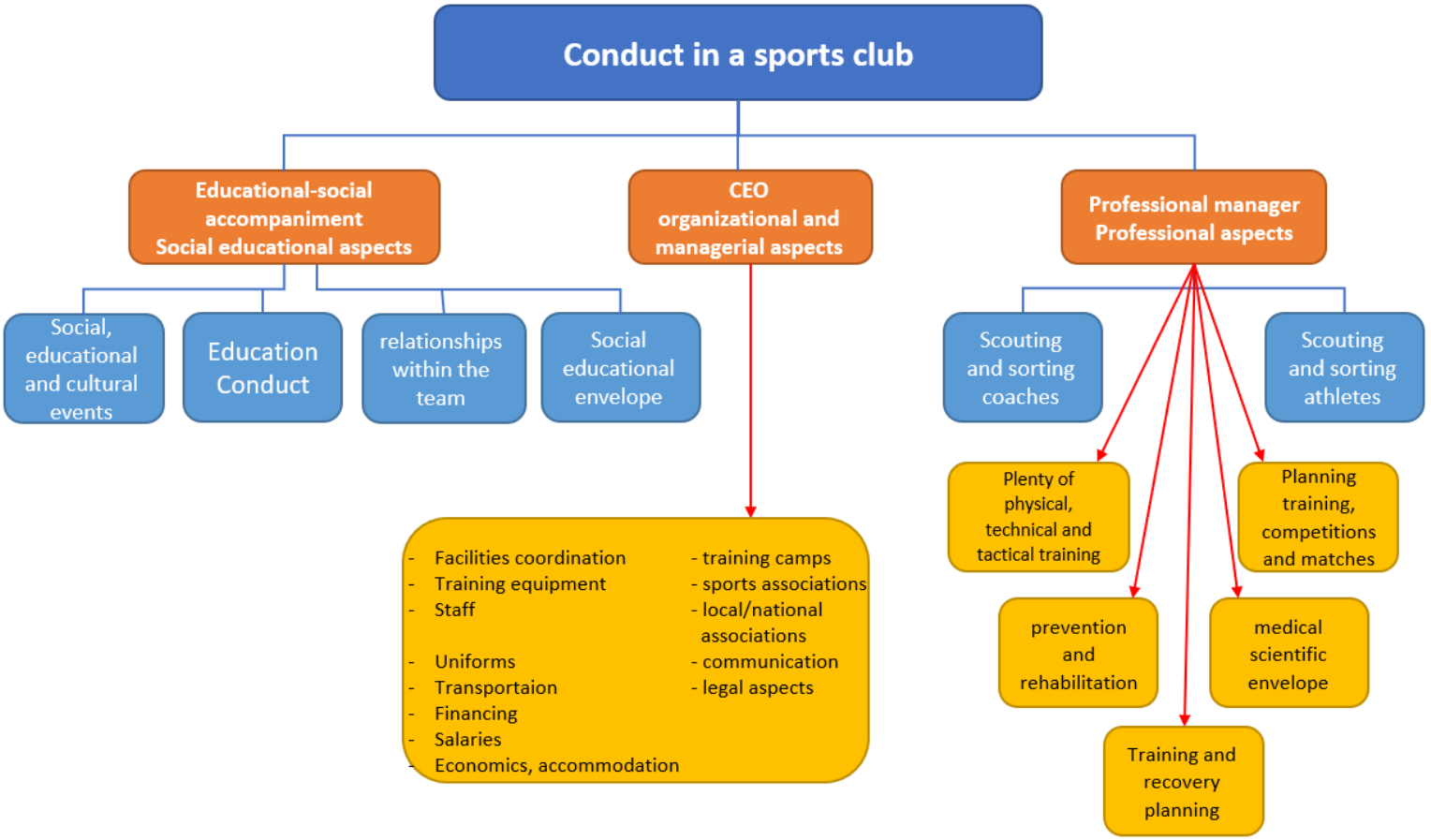

Professional environment
Personal enrichment program
Physical enrichment improvement
Technical enrichment improvement
Nutritional guidance
Mental guidance
Summary and analysis of matches gameplay and training

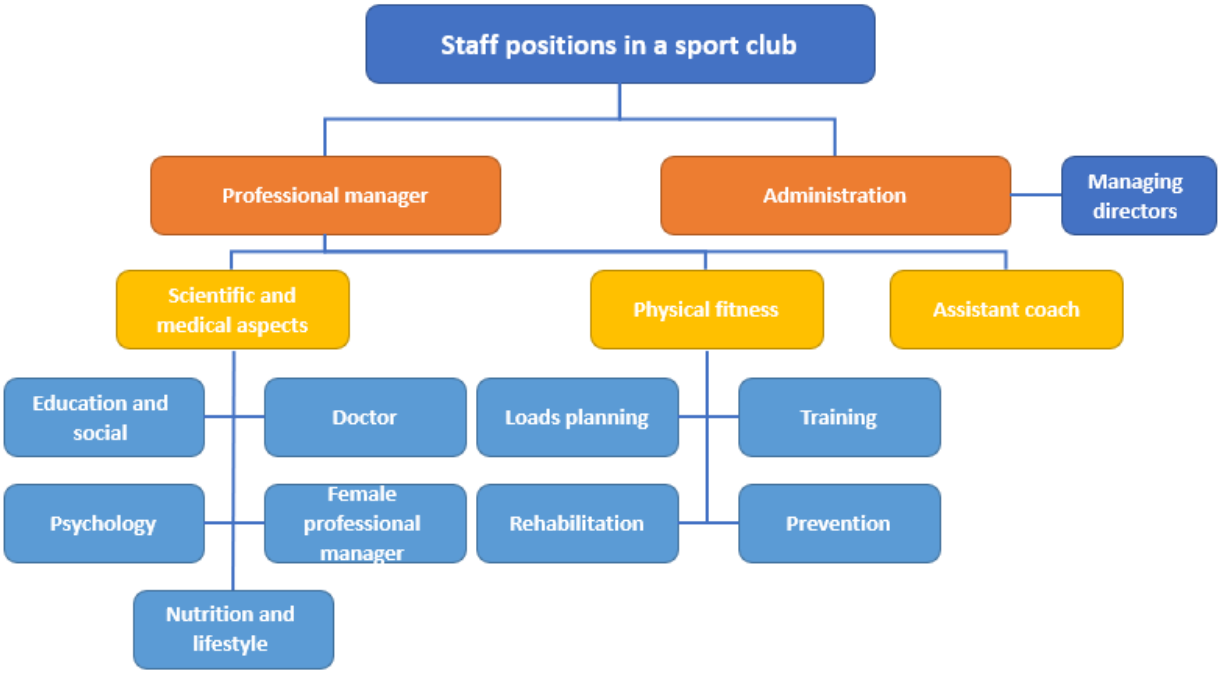
Organizational-professional structure recommendations

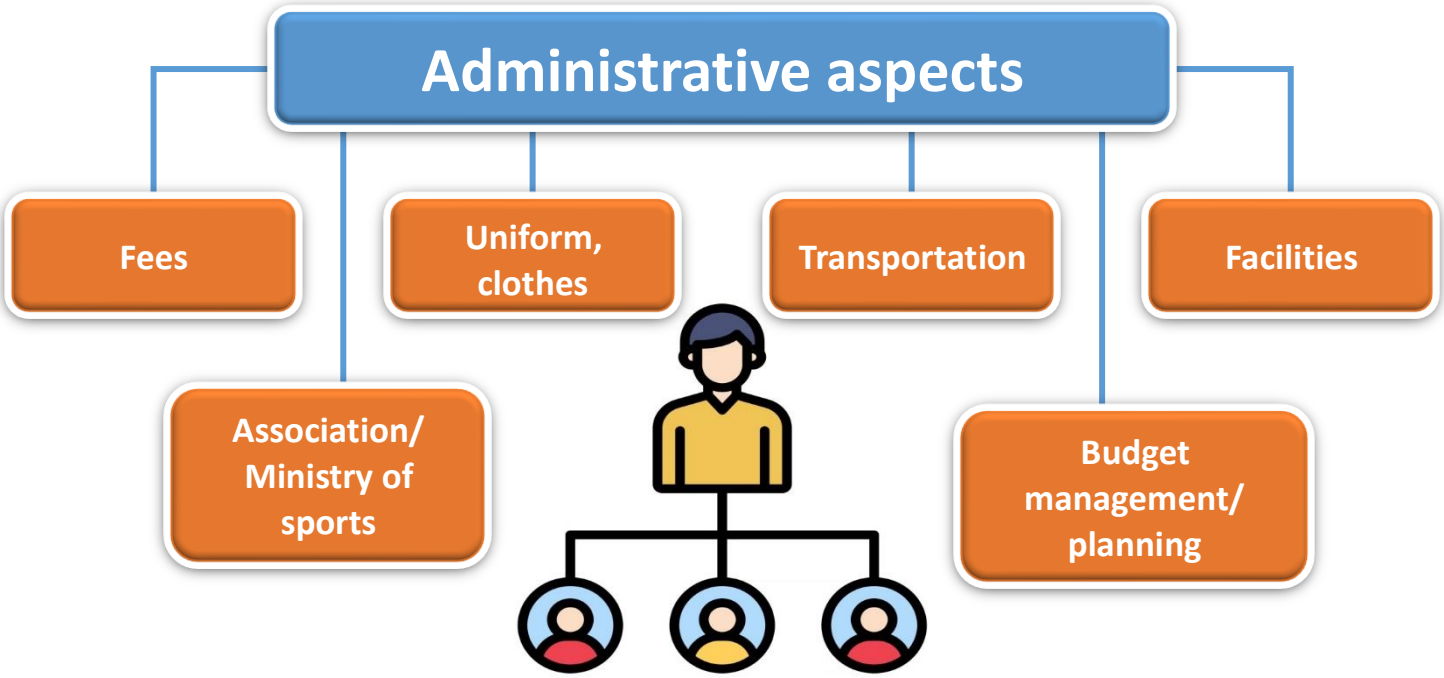
Multidisciplinary sport club

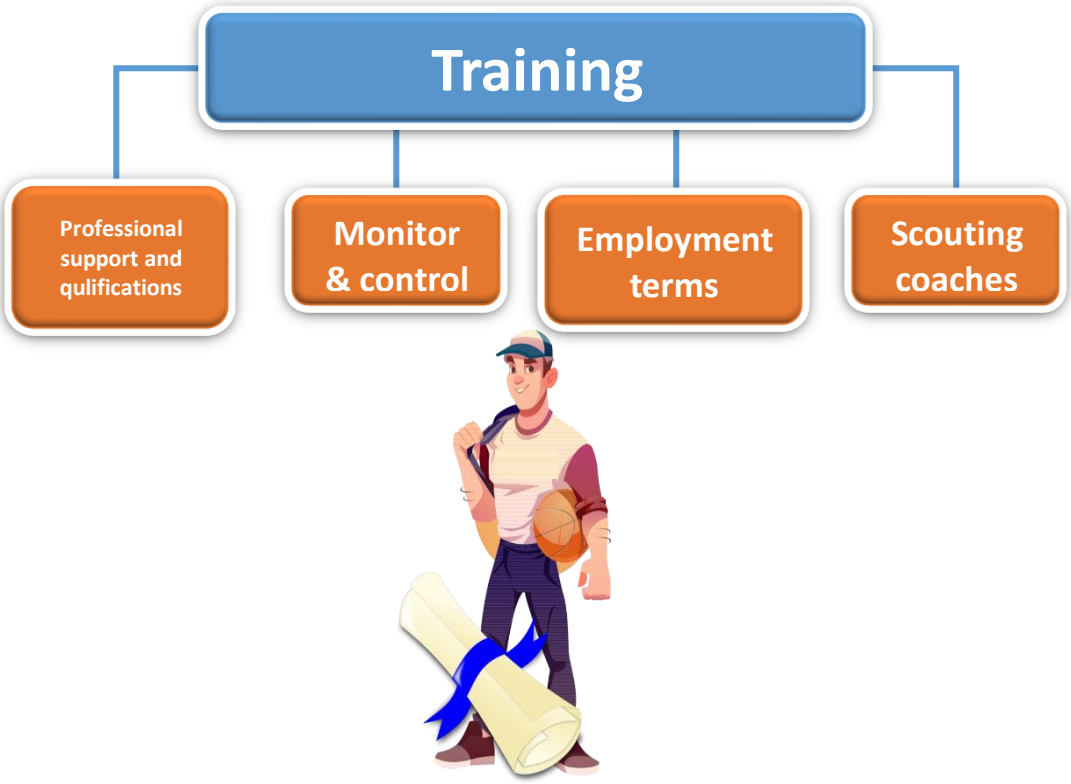
Single discipline sport club




Conduct in a sports club
Educational-social accompaniment Social educational aspects
CEO organizational and managerial aspects
Professional manager Professional aspects
Social, educational and cultural events
Education Conduct
relationships within the team
Social educational envelope
Scouting and sorting coaches
Scouting and sorting athletes
Plenty of physical, technical and tactical training
Planning training, competitions and matches
prevention and rehabilitation
medical scientific envelope
Training and recovery planning
- Facilities coordination
- Training equipment
- Staff
- Uniforms
- Transportaion
- Financing
- Salaries
- Economics, accommodation
- training camps
- sports associations
- local/national associations
- communication
- legal aspects


Staff positions in a sport club
Professional manager
Administration
Managing directors
Scientific and medical aspects
Physical fitness
Assistant coach
Education and social
Doctor
Loads planning
Training
Psychology
Female professional manager
Rehabilitation
Prevention
Nutrition and lifestyle


Administrative aspects
Fees
Uniform, clothes
Transportation
Facilities
Association/ Ministry of sports
Budget management/ planning


Training
Professional support and qulifications
Monitor & control
Employment terms
Scouting coaches

Scientifical-Methodical- Medical Envelope

- Tests, monitor and control
- Interactions: coaching-scientifical-medical staff
- Structure, staff, tasks and operation methods

Social-Educational-Cultural Envelope

- Parents
- Social,and traditional events
- Emphasis on learning
- Ethics code
- interactions in the department
- Lectures, seminars and workshops

Training volume and frequency

- Training camps
- Personal training
- Training content
- Training units

Training content, means and methods

- Means of training (exercises)
- Training methods
- Training components

Match achievements and long term trainning

- Players build-up and training for the future
- Match participation Distribution
- Match summary and analysis
- Results

Training talented athlets

- Unique "envelope" program
- Morning and enrichment training
- Training programs
- Sorting elite talents

Facilities, maintenance and coordination

- Upgrading facilities
- Coordination of logistics
- Maintenance
- cleaning

Transportation

- Contacting the company
- Transportation criteria
- Training
- Matches

Uniforms & outfits

- Personal matches equipment
- Personal training equipment
- Department accessories
- Training accessories

Membership fees

- Exceptional cases
- Payment methods
- Regulations for "Membership

Association, local authority, ministry of sports

- referees and coordinating matches
- "Invitation to tender"
- Insurance and tests according to the law of sports
- Registrations
- Contact person for ways of conduct

Staff definitions in youth department

Sporting director:

1. Preating a short, medium and long term professional plans.
2. Scouting, coordinating and combining the work of the coaches in the department.
3. Combine the scientific-medical-methodical aspects.
4. Preparing guidelines for training methods, volume and content for all age groups.
5. Subject to the CEO and the club's regulations, the director guides, advice and assist coaches in planning, monitoring and controlling training and matches processes.
6. Summary and analysis of training and matches, including technical, tactical and physical aspects.
7. Instructions and coordination, scouting and selecting new players for the club, watching activities outside the club.
8. Coordinates staff meetings.
9. Initiates and leads meetings, discussions, training courses, seminars and professional conferences according to the club's decision.
10. Direct training for groups and individual players according to club’s plan.

Baketball coach:

1. Directly trains the team
2. Match preparation and management
3. Preparing training and match plan, according to director and club’s instructions, the game plan and the methodical principles.
4. Summarize and analyze the process of training and matches, drawing conclusions and solutions.
5. Prepare reports to the director and the professional coordinator regarding planning, monitoring, control, summary and analysis.
6. Participate in professional meetings, trainings, seminars and
7. Perform actions to enrich and promote the players and the team.
8. Constant scouting of talented players, finding and bringing them to the team.
9. Personal accompaniment of the players in terms of education, social issues, behavior, personal improvement.
10. Maintaining a code of conduct

Social-Educational-Mental educational counsler

1. Observe, advice, guide and treat of socio-economic aspects
2. Observe, advice, guide and treat of studies aspects
3. Observe, counsel, guide and treat behaviors in and outside the team
4. Individual and team counseling for players.
5. Individual counseling and lectures for coaches.

Basketball head coach:

1. Coaching certificate according to the law of sports
2. Youth department employment agreement for the active season including the role's defenition
3. Reporting monthly to the mentor/professional coordinator in the union and the professional department
4. Participating in conferences, seminars and training courses (at least 20 hours per year)
5. Participating in professional forums meetings within the union (4-5 times a year)
6. The head coach is required to participate in meetings, conferences and trainings according to the union plan

Physical fitness trainer:

1. Certificate of physical fitness coach/athletics coach/physiologist physical education teacher
2. Youth department employment agreement for the active season including the role's defenition
3. Reporting monthly to the mentor/professional coordinator in the union and the professional department
4. Participating in specific training (12 hours)
5. Participating in conferences, seminars and training courses (total of 16 hours, including section 4)
6. Participating in relevant forums meetings within the union (2-3 times a year)

Requirements from the club:

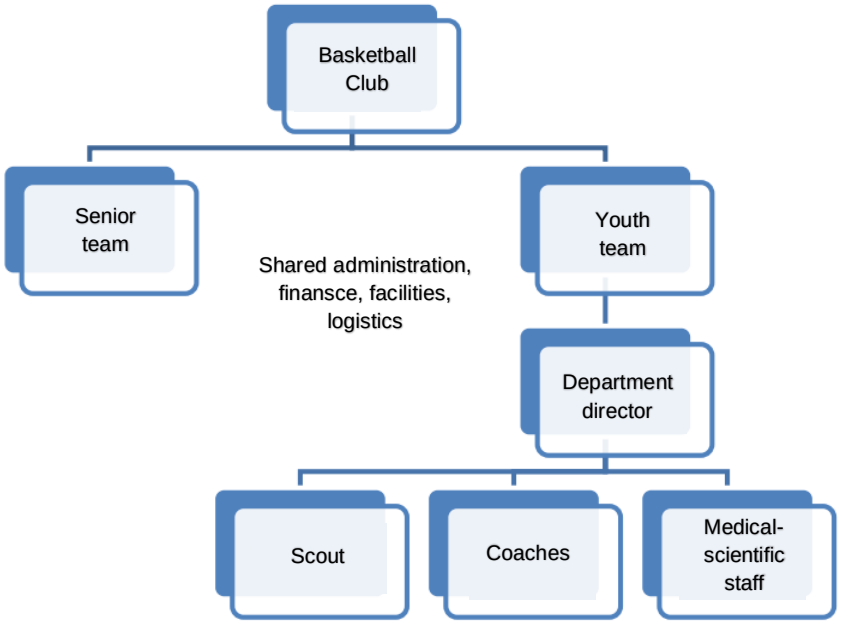
1. Organizational-professional structure that includes:
   - Management
   - Sporting director
   - Qualified coaches/trainers
   - Staff, team managers, logistics, maintenance, etc.
     (professional department will determine the definitions)
2. Adequate facilities (including a business license)
   - Training facility (preferably air conditioned), necessary equipment with sufficient facility time
   - Leisure, physical fitness, strength and coordination rooms
   - Showers, toilets
3. Medical-scientific envelope: doctor, physiotherapist, scientists
   (professional department will determine the definitions)
4. Union registration
5. Participation in matches, tournaments and events
   (according to the guidelines of the professional department and the union)
6. Multi-year professional periodization program
7. Training process determined by the professional department

Models for youth departments in clubs

Option 1 (chart in next page)

A youth department as part of a club with separate professional conduct but shared on the organizational-administrative side. Such a model exists in many European clubs (Partizan Belgrade and Red Star from serbia, clubs in Germany, Austria and more).

- 2-3 full-time head coaches (U14, U16, U18)
- 1 – 3 assistant coaches for each head coach (including physical fitness coach). The assistants coaches teams in the age group below with instructions from the head coach
- A separate physical fitness coach for ages U17-18, a shared physical fitness coach for the other teams
- Scientific-medical coordinator, responsible for rehabilitation, prevention and scientific-medical “envelope”
- Scout. Working full-time, scouting talented players and helps analyze games through video and statistics

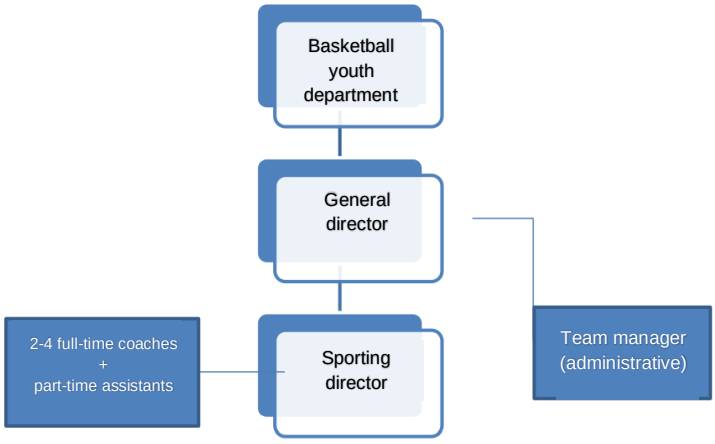


Option 2

An independent youth department, separated from senior team

(this model exists in Greece, Germany, Spain, Italy and more...)

- A physical fitness trainer, or a contract with institute providing fitness services
- A doctor and a physiotherapist, or a contract with institute providing prevention and rehabilitation services
- Nutrition services, psychology, etc. - agreement with an institute or university



Option 3

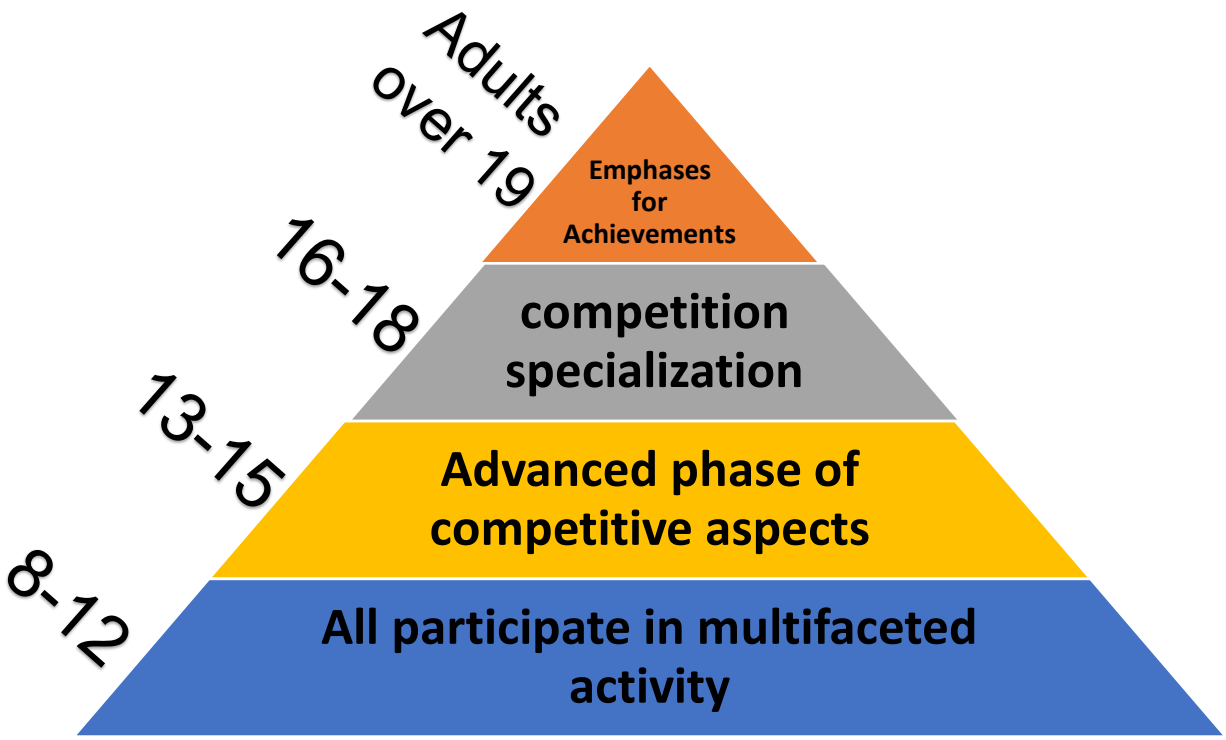
A joint activity for adults and youth

- Shared CEO for senior team and the youth department
- Sporting director for the entire club with an assistant who serves as a youth department sporting director
- Shared medical-scientific and physical fitness team.
  Each team has its coordinator.
- Sporting director and head coach of youth department work full time

  In all models there is exists a large basketball school that allows:
  - Financial income
  - Admission of children to basketball
  - Expanding the circle of fans
  - Educational, sporting, cultural and social contribution to the community

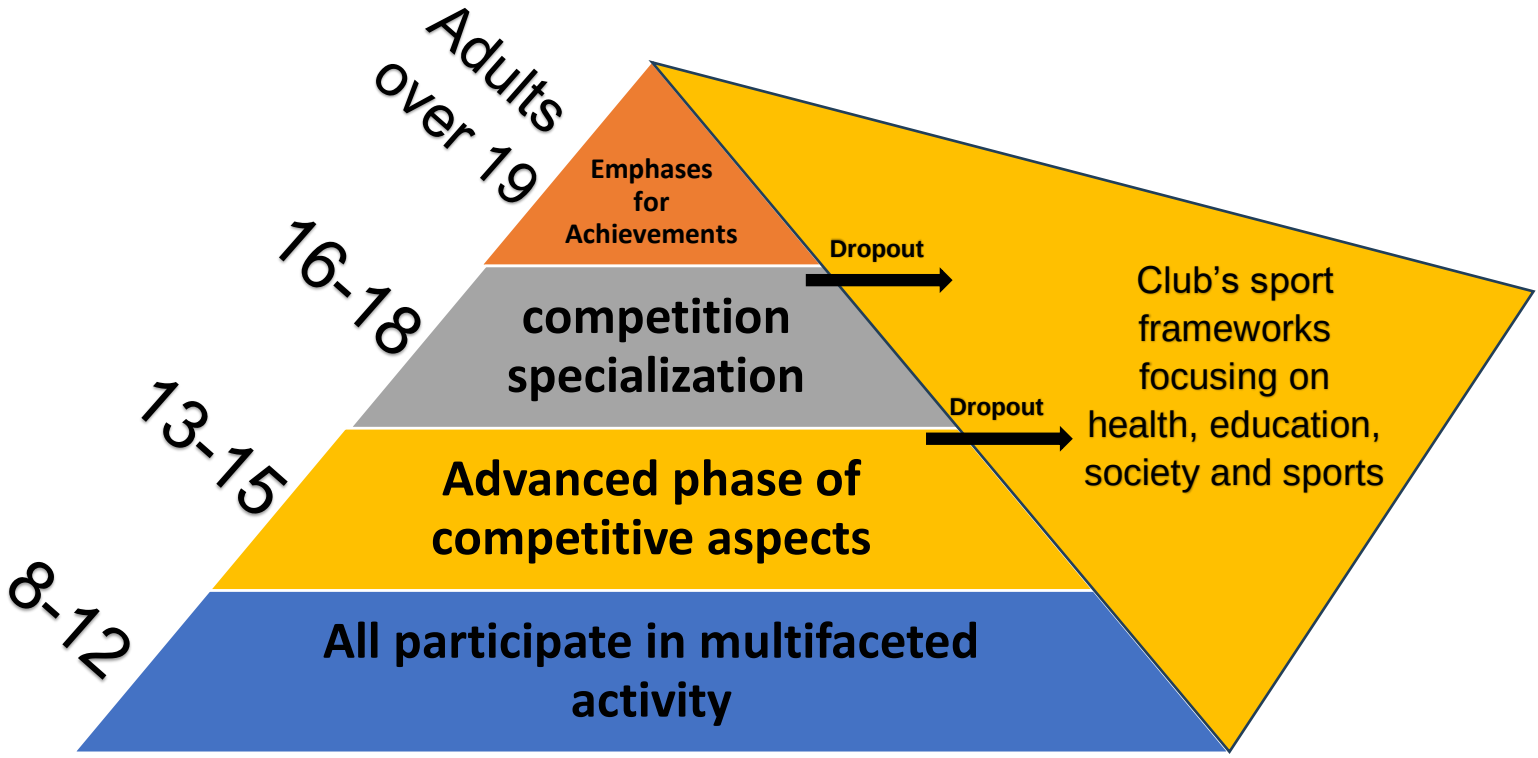
Sports Club

Professional - Achieving – Competitive Routine



Alternative

Sporting – Competitive – Social - Educational Routine



In clubs: athletes who drop out of a professional-competitive routine, move to a competitive-social-educational routine with the possibility to return.