EHPARP

Enhancing Health and Physical Activity Rates through Pentathlon

WP2. Training Format for Athletes in Pentathlon Coaching and Training

RESEARCH REPORT

UNIVERSITY OF THESSALY

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INTRODUCTION

The objective of the WP2 is the development of a Training Format, as a model methodology for the empowerment of athletes and individuals willing to explore their participation in Pentathlon as competitive or recreational athletes, within a dual career framework. This Training Format was proposed to be developed on the basis of research, including desk research and empirical research. The methodological aspects of the research were discussed among partners in the Kick-off Meeting of the project under the guidance of the WP2 coordinators (ORMA) and the partner leading the Research Phase of WP2 (UTH). The goal of the research was the identification, in partner countries and in Europe, of Pentathlon athletes' profiles extant skills, but also the needs with regards to approaching Coaching and Training in Pentathlon.

Based on the discussion from the initial meeting and further communication between all the partners, a Research Framework was developed and shared among partners to guide the Research phase of WP2. The Research Framework outlined the goal and the targeted outputs of the research and provided methodological guidance for the implementation of the research.

The *desk research* part of the Framework was to be implemented through the quest of secondary evidence, such as policy documents, papers, academic literature, statistical data, with regard to (a) the identification of the pentathlon athletes' profiles in each partner country, (b) the description of the existing policies in the partner countries regarding dual career, (c) the extant skills of athletes in each of the Pentathlon disciplines, (d) the skills coaches/trainers of individual Pentathlon disciplines should possess, (e) the challenges/obstacles dual career athletes have to face, and (f) good practices from training programmes for athletes in pentathlon coaching and training in partner country.

The *empirical research* part of the Framework was based on a Survey developed for the needs of the WP2. This survey was partly based on the Gold in Education and Elite Sport (GEES) Handbook for Dual Career Support Providers (Wylleman, De Brandt, & Defruyt, 2017) and the Dual Career Competency Questionnaire for Athletes (De Brandt et al., 2018). Participants in the survey were in total 157 athletes from individual pentathlon disciplines. The survey comprised four sections. ***Section one*** concerned the extant skills of athletes, including physical and mental skills. For each item, participants were asked to indicate (a) the importance of the skill for their sport on a 5-point scale from 1 (not at all important) to 5 (extremely important), and (b) the extent to which they possessed this skill on a 5-pont scale from 1 (not at all) to 5 (fully). ***Section two*** concerned the learning needs of athletes for developing into coach/trainers, including knowledge, team dynamics, and management skills. For each item, participants were asked to indicate (a) the importance of the skill for their sport on a 5-point scale from 1 (not at all important) to 5 (extremely important), and (b) the extent to which they possessed this skill on a

5-pont scale from 1 (not at all) to 5 (fully). ***Section three*** concerned challenges and obstacles athletes face in their career, including functional and personal factors. ***Section four*** concerned

participants' prospects and opportunities for the evolvement of a dual career around modern pentathlon. The full survey is presented in Appendix 1.

Each partner implemented the required research and provided a Research Report. These reports are presented below, followed by a section summarizing the findings regarding athletes' needs and in relation to sport training and coaching thus providing directions for the development of the Training Format.

RESEARCH REPORT - GREECE

Pentathlon in Greece is a largely under-developed sport. Subsequently, very limited resources regarding pentathlon are available, thus minimum information were extracted from desk-research. To fill the gap, we contacted the Federation and asked for their help. Eventually, certain issues regarding parts of this Framework were discussed with five individuals (2 officials and 3 coaches) through semi-structured interviews focusing on the different parts of the research framework. Empirical research was conducted through an online survey that was communicated to athletes from the individual pentathlon disciplines. Participants in the survey were 38 athletes (17 males and 21 females), from each modern pentathlon discipline (8 swimming, 7 running, 6 fencing, 10 shooting, and 7 equestrian) with a mean age 22.42 years. Among them, 10 were at secondary education and 28 at tertiary education. Their mean sport experience was 11.45 years and they had been participating in competitions for 8.52 years. They were training on average 4.76 days per week / 11.39 hours per week. They were currently competing at national (n= 32) and international (n= 6) level.

The results from the desk research, the interviews, and the survey, have been distributed to the different sections of the research framework respectively.

1. PENTATHLON IN GREECE – STATE OF THE ART

A piece of history

The name of Modern Pentathlon derives from the ancient pentathlon in Greece. The word pentathlon means contest of five sport and used to be an event in the ancient Olympic Games. The pentathlon in its initial form consists of *stadion* foot race (180 meters, wrestling, long jump, javelin, and discus). Coubertin created the Modern Pentathlon based on the history of 19th-century cavalry soldier that has to ride an unfamiliar horse, fight enemies with pistol and sword, swim, and run to return to his own line of frontier. The Modern Pentathlon was introduced for the first time in the schedule of the Olympic Games in 1912. Nowadays, the Modern Pentathlon consists of the following sport of fencing, swimming, riding and laser-run (a combination of cross-country running and laser pistol shooting). Athletes gain points in each one of the events and the total number of points is their final score.

1.A PENTATHLON IN GREECE TODAY

The Hellenic pentathlon federation is a relatively new independent federation, created in 2000 after existing in previous years as a subdivision of the track and field federation. Since the federation was created, they have officially recognized and provided support to 18 clubs across Greece, with 10 of these clubs being continuously active since recognition.

Pentathlon (and respective age group subdivision sports) registered athletes are mostly young kids and teenagers (studying at high school or early University years), both males and females. Most athletes who participate in pentathlon in Greece have previous experience in a variety of

sports, such as swimming (most common), tennis, sailing, gymnastics, or track and field, among others. In some ways this previous experience lines up with the preferences of the coaches, who stated that they prefer to work with athletes who have a swimming background, as this was considered the most helpful for athletes entering pentathlon.

Regarding the reasons that an athlete would be interested in joining a pentathlon club, participants perceived that the main reason for an athlete to switch to pentathlon would be the chance to get involved in something rather unique that offers an opportunity to practice a variety of interesting and attractive sports. This helps reducing the chances for athletes to get bored and lose interest, as it is often the case with kids and young athletes practicing a single sport. In addition, it was mentioned that due to its low popularity, athletes have more opportunities, compared to other sports, to excel and be competitive a relatively high level of national competition (which is also linked to educational career; see next section).

1.B DUAL CAREER – INSTITUTIONAL POLICIES

The State historically offers several privileges to elite athletes with exceptional performance in national and international competitions (Ministry of Civilization and Sport, 2014). Due to the financial recession, a significant number of these privileges have been ceased. Example of such privileges included appointments to job positions in the army as officers for athletes who achieve first to the eighth position in the Olympic Games, and license to operate state lottery/ betting stores. Yet, several policies have been sustained to help elite athletes; these are described below as reported by Lianos (2020).

Financial benefits

- Athletes who achieve first to eighth position in Olympic Games, World Championship and European Championship are awarded financial prizes. The amount of money they receive depends on the achievement and is determined by the Ministry of Sport and the Ministry of Finance.

Secondary Education benefits

- High school students, members of the national team, are allowed 140 additional hours of absence from classes to prepare and participate in major sport events (Olympic Games, World/European Championship, Balkan/Mediterranean Games).

Tertiary Education benefits

- Athletes attending (or have completed) high-school, who achieve exceptional results in international competitions have privileges regarding their admission

  to tertiary education. These privileges depend on the type of competition (age and level) in which they participate. For athletes achieving first to sixth position in Olympic Games and World Championships or first to third position in European

Championship have the opportunity to be admitted to the University (any department of their preference) without examinations. For respective achievements in age group or school competitions athletes are admitted to the Sport Science Departments of Greek Universities or receive bonus (as surcharge to their exam grades) for admission to other university departments.

- Athletes attending (or have completed) high-school, who achieve exceptional results in national championship, national age group championships or school championship receive bonus (as surcharge to their exam grades) for admission to other university departments of their preference. The bonus depends on the sport achievement.

Military Service benefits

- The military service in Greece in compulsory for males and varies from 9 to 12 months. There is a special military unit for Elite Athletes that serve their military service, the Athletic Center of Military Forces. The purpose of this Center is to provide the chance to elite athletes to continue their training and participate in competition at high level, as athletes representing their club (e.g., National Championships), the national team (International Championships), and the military (National and International Military Championships). The capacity of the unit is 160 athletes serving their military service. The selection is based on athletic achievements. Athletes selected to serve in this special Center present themselves and serve properly (as all other men) the 'basic education period' for 3 weeks, in military camps all over the country depending on the military body they belong. Thereafter, they register to the Athletic Center of Military Forces. During the rest of their service they are allowed to continue their athletic training/career and their obligation is to present occasionally at the military center deepening on the needs of the center. They also have to submit quarterly official confirmation from their sport federation that they train systematically and compete.

Employment benefits

- Athletes who have achieved first to third position in Olympic Games are entitled to be appointed to sport-related positions in public services. Such appointments can be enforced upon relevant calls addressing needs for personnel in sport-related positions.

- Elite athletes working as public servants at any domain are entitled to extraordinary leave of absence to prepare and participate in in Olympic Games, World Championship, and European Championship.

2. IDENTIFICATION OF THE EXTANT SKILLS AND NEEDS OF ATHLETED IN INDIVIDUAL PENTATHLON DISCIPLINES

Several skills and competencies were identified through the interviews as being important for pentathlon athletes. This included knowledge of each sport-experience, stamina, concentration, power, speed, technique of each sport, discipline, mobility, reaction speed, and importantly loyalty. More elaborated results regarding the skills and competencies required in pentathlon, and accordingly the needs of athletes from the individual pentathlon disciplines, emerged through the survey with athletes of the individual pentathlon disciplines.

Mean scores regarding the importance of physical and mental skills of the sport, the extant skills of athletes, and the training needs of athletes for each modern pentathlon discipline are presented in Table 1. The Table includes mean scores for the physical and mental skills factors (i.e., physical attributes and mental attributes) and the individual items (i.e., all descriptors below each factor), for each of the two rating scales (i.e. importance and possession), but also their product (i.e., need - after reversing scores for possession), as indicative of the prioritization of athletes' needs.

The extant skills of athletes for the physical attributes among the five sports were: (a) for swimming, athletes scored higher for speed, coordination, and power/acceleration, (b) for running, athletes scored higher for cardiovascular endurance, spatial awareness, and muscular endurance / peripheral vision, (c) for fencing, athletes scored higher for spatial awareness, cardiovascular endurance, and flexibility, (d) for shooting, athletes scored higher for muscular endurance, cardiovascular endurance, and coordination, and (e) for equestrian, athletes scored higher for spatial awareness, coordination, and strength. Additionally, the extant skills of athletes for the mental skills among the five sports were: (a) for swimming, athletes scored higher for concentration, confidence, and emotion regulation / mental toughness, (b) for running, athletes scored higher for concentration, mental toughness, and confidence, (c) for fencing, athletes scored higher for concentration, accuracy, and anticipation, (d) for shooting, athletes scored higher for accuracy, concentration, and emotion regulation, and (e) for equestrian, athletes scored higher for concentration, anticipation, and confidence / mental toughness.

The need priorities for the physical skills among the five sports were: (a) for swimming, higher needs were identified for cardiovascular endurance, muscular endurance, and power/acceleration, (b) for running, higher needs were identified for flexibility, strength, and

coordination, (c) for fencing, higher needs were identified for speed, muscular endurance, and coordination, (d) for shooting, higher needs were identified for cardiovascular endurance, coordination, and muscular endurance, and (e) for equestrian, higher needs were identified for cardiovascular endurance, muscular endurance, and flexibility. Additionally, the need priorities for the mental skills among the five sports were: (a) for swimming, higher needs were identified for anxiety control, relaxation, and confidence, (b) for running, higher needs were identified for anxiety control, confidence, and emotion regulation, (c) for fencing, higher needs were

identified for anxiety control, emotion regulation, and mental toughness, (d) for shooting, higher needs were identified for confidence and relaxation / anxiety control / mental toughness, (e) for equestrian, higher needs were identified for anxiety control, emotion regulation, and concentration /arousal regulation / confidence.

Table 1. Mean scores for extant skills of athletes and identification of needs (Imp: Importance, Pss: Possession, Nd: Need)

	SWIMMING			*RUNNING*			*FENCING*			*SHOOTING*			*EQUESTRIAN*		
	Imp	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**
Physical attributes	**3.16**	**3.70**	**6.65**	**3.67**	**3.36**	**9.31**	**3.05**	**3.62**	**6.74**	**2.12**	**3.07**	**5.55**	**3.71**	**3.32**	**9.47**
Muscular endurance	3.50	3.75	7.50	3.85	3.57	8.85	3.10	3.30	8.40	3.00	3.83	6.16	4.42	3.42	11.28
Cardiovascular endurance	3.75	3.62	8.62	4.42	4.14	7.57	3.70	3.80	7.60	3.50	3.66	7.83	4.57	3.00	13.85
Speed	3.37	4.00	6.50	3.57	3.28	9.85	3.90	3.60	9.20	1.16	2.50	4.00	2.71	2.85	7.85
Flexibility	2.75	3.50	6.00	4.14	3.28	10.85	2.60	3.70	5.00	1.33	2.33	4.66	3.28	2.85	10.00
Strength	3.12	3.62	6.87	3.71	3.00	10.71	2.10	3.60	4.60	1.83	3.00	5.33	3.14	3.57	8.14
Coordination	3.25	4.00	5.87	3.71	2.71	11.71	3.50	3.60	7.90	3.33	3.50	7.66	4.00	3.71	8.71
Power / Acceleration	3.50	3.87	7.25	3.14	2.85	9.28	2.80	3.20	7.30	1.66	2.33	6.00	2.71	2.85	7.71
Peripheral vision	2.50	3.37	5.62	3.28	3.57	7.71	2.50	3.60	5.30	1.33	3.16	3.66	4.14	3.71	8.85
Spatial awareness	2.75	3.62	5.62	3.28	3.85	7.28	3.30	4.20	5.40	2.00	3.33	4.66	4.42	4.00	8.85
Mental attributes	**3.36**	**3.31**	**8.37**	**3.85**	**3.32**	**9.63**	**3.51**	**3.11**	**9.91**	**3.53**	**3.33**	**8.57**	**4.12**	**3.75**	**8.90**
Concentration	3.68	3.62	8.37	4.42	4.14	7.85	4.10	4.00	7.80	4.00	3.50	9.00	4.85	4.14	9.00
Relaxation	3.12	3.25	8.75	3.14	3.14	7.00	2.80	3.00	8.50	3.83	3.33	9.83	3.57	3.57	7.85
Arousal regulation	2.75	3.12	7.62	2.85	2.71	8.28	3.00	2.70	9.70	2.50	2.83	6.83	3.42	3.14	9.00
Accuracy	3.37	3.25	8.87	3.14	3.28	7.42	3.50	3.50	8.80	4.00	4.00	7.50	4.28	3.85	8.71
Anxiety control	3.50	3.00	10.25	4.28	3.00	13.14	3.70	2.60	13.30	4.00	3.33	9.83	4.14	3.28	12.14
Confidence	3.75	3.62	8.62	4.71	3.42	12.28	3.80	3.20	9.80	3.83	3.16	10.33	4.42	4.00	9.00
Emotion regulation	3.25	3.37	8.00	4.28	3.28	11.85	3.80	2.70	12.30	3.83	3.50	9.16	4.28	3.71	9.85
Anticipation	2.75	3.25	6.87	3.57	3.42	9.00	3.70	3.50	8.90	1.83	3.00	4.83	4.42	4.14	7.85
Mental toughness	3.25	3.37	8.00	4.28	3.57	9.85	3.20	2.80	10.10	4.00	3.33	9.83	3.71	4.00	6.71

3. IDENTIFICATION OF LEARNING NEEDS FOR DEVELOPING PENTATHLON COACHES/TRAINERS

Several skills and competencies were identified through the interviews as being important for pentathlon coaches. In particular, it was reported that coaches should be patient, have knowledge and experience for each of the sports but also be cooperative with coaches from the individual pentathlon disciplines, demonstrate caring about both the athlete and the sport. Participants also mentioned that it is valuable to have previous experience as athlete prior to becoming a coach, with experience in pentathlon being ideal. Athletes' perspectives regarding their training needs for becoming coaches evolved from the survey.

Mean scores regarding importance, extant skills, and needs of athletes for each modern pentathlon discipline are presented in Table 1. The Table includes mean scores for the knowledge, team dynamics and management skills factors and the individual items (i.e., all descriptors below each factor), for each of the two rating scales (i.e. importance and possession), but also their product (i.e., need - after reversing scores for possession), as indicative of the prioritization of athletes' needs.

Regarding knowledge, the need priorities for the five sports were: (a) for swimming, higher needs were identified for mentoring and tactical knowledge, (b) for running, higher needs were identified for mental training and mentoring, (c) for fencing, higher needs were identified for mentoring and technical knowledge, (d) for shooting, higher needs were identified for mental training and mentoring, (e) for equestrian, higher needs were identified for technical and tactical knowledge. Regarding team dynamics, the need priorities for the five sports were: (a) for swimming, higher needs were identified for team building and leadership, (b) for running, higher needs were identified for team building and leadership, (c) for fencing, higher needs were identified for team building and emotional intelligence, (d) for shooting, higher needs were identified for communication and cooperation, (e) for equestrian, higher needs were identified for leadership and communication. Regarding management skills, the need priorities for the five sports were: (a) for swimming, higher needs were identified for problem solving and goal setting, (b) for running, higher needs were identified for goal setting and conflict resolution, (c) for fencing, higher needs were identified for problem solving and decision making/goal setting, (d) for shooting, higher needs were identified for goal setting and problem solving, (e) for equestrian, higher needs were identified for goal setting and problem solving.

Table 2. Mean scores for learning needs for developing into coach/trainer (Imp: Importance, Pss: Possession, Nd: Need)

	SWIMMING			*RUNNING*			*FENCING*			*SHOOTING*			*EQUESTRIAN*		
	Imp	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**
Knowledge	3.87	3.94	7.24	4.22	2.94	12.85	4.26	3.48	10.32	3.96	3.86	8.16	4.25	3.56	10.08
Technical knowledge	3.75	4.00	7.12	4.00	3.00	11.42	4.60	3.50	11.20	4.33	4.33	7.33	4.42	3.57	10.71
Tactical knowledge	3.87	4.12	7.37	4.14	3.00	12.57	4.50	3.50	10.80	3.83	4.33	6.50	4.42	3.42	10.71
Physical Training	3.87	4.12	7.12	4.14	2.85	12.42	3.60	3.60	8.10	3.00	2.83	5.33	3.57	3.85	9.42
Mental training	4.00	4.00	7.00	4.57	3.00	14.57	4.40	3.10	10.20	4.33	4.16	13.83	4.57	3.71	9.71
Mentoring	3.87	3.50	7.62	4.28	2.85	13.28	4.20	3.70	11.30	4.33	3.66	7.83	4.28	3.28	9.85
Team dynamics	3.70	3.93	7.22	3.56	3.47	9.44	4.31	3.91	8.96	3.46	3.60	8.60	3.92	3.82	8.63
Leadership	3.37	3.50	7.87	3.85	2.57	12.00	3.50	2.90	7.90	3.16	3.50	6.83	3.42	2.71	10.42
Team building	3.62	4.00	8.75	3.57	3.28	12.42	4.30	4.30	13.40	2.33	3.16	6.00	3.14	3.42	9.42
Cooperation	3.75	4.12	7.00	3.42	4.14	8.57	4.40	4.10	7.50	3.83	3.33	11.00	4.00	3.85	9.28
Communication	4.12	4.25	7.00	3.57	3.71	6.57	4.70	4.20	8.70	4.16	4.00	11.33	4.57	4.57	10.00
Empathy	3.75	3.87	6.00	3.57	3.57	8.28	4.40	4.00	7.30	3.50	3.83	7.66	4.42	4.28	6.28
Emotional intelligence	3.62	3.87	6.75	3.42	3.57	8.85	4.60	4.00	9.00	3.83	3.83	8.83	4.00	4.14	6.42
Management skills	3.58	3.74	7.10	3.85	3.16	11.06	4.33	3.78	9.31	3.97	3.83	8.71	4.02	3.68	8.35
Time management	3.75	3.87	7.00	3.28	3.28	8.14	4.60	3.70	9.00	4.00	4.00	9.33	4.14	4.28	7.71
Decision making	3.75	4.00	7.37	3.85	3.00	10.85	4.40	3.80	9.90	3.83	3.83	8.00	4.57	3.42	7.85
Goal setting	4.00	4.12	7.50	4.71	3.42	14.28	4.60	3.90	9.90	4.16	3.66	9.66	4.14	4.14	10.42
Self-regulation	3.12	3.62	5.50	3.71	3.28	10.00	4.20	3.40	8.60	4.00	3.66	9.16	4.14	3.57	7.42
Problem solving	3.62	3.50	8.12	3.85	2.71	10.42	4.30	4.00	10.90	4.33	4.00	9.50	4.28	3.42	9.85
Conflict resolution	3.25	3.37	7.12	3.71	3.28	12.71	3.90	3.90	7.60	3.50	3.83	6.66	2.85	3.28	6.85

4. CHALLENGES AND PROSPECTS IN SPORT / DUAL CAREER

4.A CHALLENGES

Over the last decade, the sport of pentathlon has faced a lot of challenges due to the federations limited budget not providing enough funding to fully support the growth of the sport, and to support the players joining, leaving much of the funding to depend on personal resources. Despite these challenges the sport of pentathlon has shown consistent growth over the last several years, as more and more children become interested and start to participate in the sport. Over the last few years the federation has begun to put more emphasis on trying to help support the athletes in the sport as the talent level rises, but more funding is needed as athletes still need financial resources to be able to train uninterrupted for the whole year.

The financial demands of pentathlon can be classified as being medium to high, creating to some pressures on the families of children interested in playing. However, there are some opportunities for children from families in lower income brackets to be supported in their desire to compete, as some clubs and the federation will allow individuals to borrow needed equipment in the short term until the individuals are able to buy their own. Equipment has been also identified as a key issue for the development of the sport and athletes. While the federations provided the pistols elite athletes need for training, very few of these pistols were appropriate to be used to at high level competitions. Similarly, regarding expensive equipment, such as swords, these are generally provided by the clubs and federations, however the equipment is old and needs to be replaced and updated, mainly to protect the health and safety of the athletes. Finally, they noted that, given the circumstances, the federation does a good job of provided everything needed for national events, as pentathlon is a very demanding in organization and equipment sport.

Beyond the lack of funding available for the federation, several other obstacles were identified. Athletes face issues such as exhaustion leading to increased injuries and increased hours per day that leads to reduced personal time and the lack of competition within Greece. Finally, a major problem identified by participants was the lack of specific diploma or certification for pentathlon trainers/coaches.

Evidence regarding the challenges athletes from the individual pentathlon disciplines are facing emerged from the survey. Mean scores for functional and personal challenges and obstacles as perceived by athletes of each discipline are presented in Table 3.

Overall, the results for the functional challenges/obstacles for participants of the five sports were: (a) for swimming, athletes scored higher for limited access to training facilities and financial burden, (b) for running, athletes scored higher for limited access to training facilities and financial burden, (c) for fencing, athletes scored higher for financial burden and organizational structures in sport, (d) for shooting, athletes scored higher for organizational structures in sport and financial burden, and (e) for equestrian, athletes scored higher for lack

of time/energy and limited access to training facilities. Additionally, the results for the personal challenges/obstacles for participants of the five sports were: (a) for swimming, athletes scored higher for stress, emotional stability, and lack of motivation/commitment, (b) for running,

athletes scored higher for stress, lack of motivation/commitment, and family life demands, (c) for fencing, athletes scored higher for stress, injuries, and emotional stability, (d) for shooting, athletes scored higher for stress and peer and parental pressure, (e) for equestrian, athletes scored higher for emotional stability, stress, and parental/coach pressure.

Table 3. Mean scores for functional and personal challenges and obstacles by individual discipline

	SWIMMING	*RUNNING*	*FENCING*	*SHOOTING*	*EQUESTRIAN*
Functional	**3.20**	**3.28**	**3.01**	**3.35**	**3.02**
Lack of time / energy	3.25	3.28	2.90	3.16	3.57
Limited access to training facilities	3.62	3.42	2.30	3.33	3.42
Transportation	3.00	3.14	2.50	2.66	2.85
Financial burden	3.37	3.42	4.10	3.50	3.00
Lack of equipment	2.75	3.28	3.10	3.16	2.28
Organizational structures in sport	3.25	3.14	3.20	4.33	3.00
Personal	**2.58**	**2.83**	**2.54**	**3.44**	**2.58**
Stress	3.25	3.28	3.80	4.33	3.14
Injuries	2.87	2.71	3.10	2.66	2.42
Lack of motivation / commitment	2.62	3.28	1.90	3.83	1.57
Emotional stability	3.25	2.85	3.00	3.83	3.85
Media / social media	3.12	2.71	2.00	2.33	2.28
Peer pressure	2.00	2.42	2.00	4.00	1.85
Parental pressure	2.12	2.57	2.30	4.00	2.85
Pressure from coach	2.00	2.71	2.30	2.83	2.85
Family life demands	2.00	3.00	2.50	3.16	2.42

4.B PROSPECTS FOR A PENTATHLON CAREER

According to the interviews that were conducted, officials and coaches seem to believe that there are currently limited opportunities to pursue a career in pentathlon in Greece. For athletes, it can be very difficult as they are required to perform at good level in 5 different sports, and there are very limited opportunities to compete in Greece, with few teams, and low recognition of the sport in the general population. Coaches believed that eventually it will become more feasible for athletes to have a career in pentathlon, as awareness regarding pentathlon increases and people get to know and experience the assets of the sport.

The survey with athletes form the individual pentathlon sports revealed interesting findings regarding existing knowledge and prospects. Overall, the results showed that almost half of participants could not name the pentathlon disciplines, 25% had never looked for information regarding the Modern Pentathlon. Few were aware of pentathlon clubs and athletes, and some

would consider a career in pentathlon as athletes or coaches. Encouragingly though, half or more could see some prospect in a pentathlon career and would be willing to get appropriate education towards this direction. The results in details per individual pentathlon discipline are presented in Table 4.

Table 4. Prospects for a dual career in modern pentathlon

	SWIMMING		RUNNING		FENCING		SHOOTING		EQUESTRIAN		TOTAL
	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	%YES
1. Have you ever heard about the Modern Pentathlon	6	2	3	4	9	1	6	0	4	3	73%
2. Have you ever looked for information regarding the Modern Pentathlon	0	8	2	5	4	6	1	5	1	6	21%
3. Do you know what sports comprise the Modern Pentathlon	2	6	3	4	7	3	3	3	5	2	52%
4. Have you ever considered becoming involved in the Modern Pentathlon as athlete	0	8	0	7	2	8	1	5	2	5	1%
5. Would you be interested to eventually become involved with Pentathlon as a trainer in your sport	5	3	3	4	5	5	3	3	6	1	60%
recreational / competitive / both	0/3/2		1/1/1		0/3/2		0/0/1		0/3/3		
6. Would you consider as a dual career opportunity as a Modern Pentathlon trainer	3	5	4	3	3	7	2	4	5	2	44%
recreational / competitive / both	0/2/1		1/1/2		0/2/1		0/2/0		0/2/3		
7. How feasible you think it is to combine in the future your career with a career in Pentathlon	4	4	2	5	4	6	2	4	3	4	39%
8. Do you know if there is a pentathlon club in your area	2	6	0	7	4	6	1	5	0	7	18%
9. Do you know anyone doing pentathlon recreationally	1	7	0	7	5	5	1	5	1	6	21%
10. Do you know anyone doing pentathlon competitively	2	6	2	5	6	4	1	5	0	7	28%
11. Could you see in a prospect for a career in Pentathlon (as a secondary occupation)	3	5	5	2	4	6	2	4	4	3	47%
12. Are you willing to get appropriate education/training to purse a Pentathlon-related job (as a secondary occupation)?	5	3	6	1	5	5	1	5	5	2	57%

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BEST PRACTICES

BEST PRACTICE 1

Name of the Project/Organization	**EHPARP: Enhancing Health and Physical Activity Rates through Pentathlon**
Type of organization	**Hellenic Federation of Modern Pentathlon**
Country	Greece
Description of the practice (project or organisation)	The Hellenic Federation of Modern Pentathlon attempting to promote the sport and encourage new athletes to be involved in this sport adopted the following strategies: (a) the issuance of a athletes' sport card and their participation in sport events is free; (b) coaches equipment and facilities for athletes training in fencing and horse riding provided by the federation; (c) the federation lend the laser pistols to the clubs that can afford to buy them (minimum *purchase amount* is 1.000 euros).
Relevance to the EHPARP project	The collaboration between the Federation and pentathlon clubs aims to remove financial burden from potential athletes, thus facilitating the promotion of Pentathlon.

Impact of the practice	This practice can promote and motivate the involvement of new athletes in Modern Pentathlon and increase the number of member-athletes of the Federation. Additionally, athletes' training and participation in sport events can enhance their health.
References, sources	https://www.sportime.gr/spor/alla-athlimata/monterno-pentathlo-stin-ellada-ena-ftocho-paidi-mporei-na-kanei-ippasia/

BEST PRACTICE 2

Name of the Project/Organization	**EHPARP: Enhancing Health and Physical Activity Rates through Pentathlon**
Type of organization	**Hellenic Federation of Modern Pentathlon**
Country	Greece
Description of the practice (project or organisation)	The Hellenic Federation of Modern Pentathlon Greece, under the supervision of the General Secretariat of Sport, organizes School for Modern Pentathlon Coaches. The school is addressed to elite/former elite athletes and provides diplomas that enable participants to work as coaches at different coaching levels (Level C to Level B), depending on previous qualifications/ academic degrees. Participants attend a number of hours, varying from 300 to 400. The training is delivered by Academic staff specialized in different sport science disciplines.
Relevance to the EHPARP project	The training is addressed to elite athletes aiming at initiating a coaching career in cycling.
Impact of the practice	This practice allows elite cyclists to get training from experts. This training helps athletes make their first steps as coaches under the supervision of experienced coaches.
References, sources	Cycling Federation: http://helleniccycling.gr/%CF%83%CF%87%CE%BF%CE%BB%CE%AE%CF%80%CF%81%CE%BF%CF%80%CE%BF%CE%BD%CE%B7%CF%84%CF%8E%CE%BD%CF%80%CE%BF%CE%B4%CE%B7%CE%BB%CE%B1%CF%83%CE%AF%CE%B1%CF%82-%CE%BC%CE%B5%CF%84%CE%AC-%CE%B1%CF%80%CF%8C-15/

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RESEARCH REPORT - ESTONIA

The research framework has been developed based on desk - and empirical research. Estonia as a country is very fond of sports, with a lot of effort being put into developing it, such as providing young athletes with the funds and opportunities, building the necessary infrastructure and working for the policies to support this. However there is still a long way to go in general, and this is especially true for modern pentathlon, which is currently being held alive by very specific interested individuals, who promote the sport and find and train the youth. Almost no resources exist about pentathlon, information can only be find through sports registries and news articles about persons and their interviews.

Empirical research was conducted through an online survey that was communicated to athletes from individual pentathlon disciplines.Participants were 31 athletes (20 males and 11 females) from modern pentathlon discipline (5 swimming, 11 running, 5 fencing, 6 shooting, and 4 equestrian) with a mean age 23.26 years. Among them, 13 were at secondary education and 18 at tertiary education. Their mean sport experience was 10.38 years and they had been participating in competitions for 6.45 years. They were training on average 3.82 days per week / 8.36 hours per week. They were currently competing at local (n= 2), national (n= 17) and international (n= 12) level.

1. PENTATHLON IN ESTONIA – STATE OF THE ART

A piece of history

Estonia can be said to be actively participating in this sport since 1953, when first Estonian championships were held. Even though the sport is not very widespread in Estonia, it is being practiced in both of the bigger cities – Tallinn and Tartu, with sports clubs available. Estonia has also had some success in the field – Hanno Selg became the Soviet Union champion in 1960, also winning a team silver in the 1960 Olympic Games. Imre Tiidemann, has participated in the olympics 3 times, 1992 to 2000, with the best place being 7. He was the European Champion of Modern Pentathlon in 2000.

1.A PENTATHLON IN ESTONIA TODAY

It was thought that Tiidemann retiring his sports career in 2004 would mean the end to the sport. Through the support and training of Tiidemann himself and Enn Jaigmaa it has gone on living. Tiidemann himself claims while older athletes in Estonia do not exist at the moment, the youth are coming in. Many of the young athletes take the sport seriously, with only 40 modern penthathlon practioners in total, Estonias team got 9th place in the youth World championship in the team competition. In Tiidemanns words, athletes move a lot, many staying with some spefic sport, such as fencing, moving on from pentathlon. Growth is also taken place, with 47 practioners in 2020.

Modern pentathlon can be practiced in 4 different organisations in Estonia, which are situated in Tallinn and Tartu. The audentes sports school also takes in practitioners in this sport. Only one higher level trainer, Tiidemann himself, is in Estonia, however 11 trainers work with the practitioners in total.

Benefits to athletes in Estonia

Athletes in Estonia who place first in the Olympic games are eligible to get financial support from the country. This monthly payment can be received by athletes when they have 10 years till retirement age or when they lose their ability to work fully or partly. The size of the payment is tied directly to the national average, which updates over time. The top 3 places in the Olympic games also receive a one time payment of 100 000, 70 000 or 45 000 EUR respectively.

Students in the secondary education in Estonia are only allowed to be absent from one fifth of all lessons without cause. However, sports competitions qualify as cause in almost all high schools in Estonia, making sure that athletes are able to compete without problems.

Benefits exist for student athletes who start in tertiary education. The universities in Estonia are free to attend for students, however places are limited and with a competition. Some student athlete applicants every year can be chosen to get ahead with special conditions, allowing them to start studies in their chosen fields without having to fulfill the usual conditions and without having to compete for the positions.

Estonia has mandatory military service for all male citizens who are eligible in physical and mental health. The top athletes, those who have either achieved positions in the top 10 in the youth or junior categories or top 30 in the adult categories are eligible to serve in the athlete service. Imre Tiidemann, the top modern pentathlon, and previous top athlete in the field, is also behind creating the athlete section the military service. The soldier base course is completed alongside regular soldiers without any differences in what has to be done, however in the end of the base course the athletes are freed from the service. The second special part of the athlete service is them having the possibility to train during the base course, during which regular people have very strict restrictions to their movement.

2. IDENTIFICATION OF THE EXTANT SKILLS AND NEEDS OF ATHLETED IN INDIVIDUAL PENTATHLON DISCIPLINES

Several skills and competencies were identified through the interviews as being important for pentathlon athletes. This included knowledge of each sport-experience, stamina, concentration, power, speed, technique of each sport, discipline, mobility, reaction speed, and importantly loyalty. More elaborated results regarding the skills and competencies required in pentathlon, and accordingly the needs of athletes from the individual pentathlon disciplines, emerged through the survey with athletes of the individual pentathlon disciplines.

Mean scores regarding the importance of physical and mental skills of the sport, the extant skills of athletes, and the training needs of athletes for each modern pentathlon discipline are presented in Table 1. The Table includes mean scores for the physical and mental skills factors (i.e., physical attributes and mental attributes) and the individual items (i.e., all descriptors below each factor), for each of the two rating scales (i.e. importance and possession), but also their product (i.e., need - after reversing scores for possession), as indicative of the prioritization of athletes' needs.

The extant skills of athletes for the physical attributes among the five sports were: (a) for swimming, athletes scored higher for cardiovascular endurance, muscular endurance, and strength, (b) for running, athletes scored higher for cardiovascular endurance, spatial awareness, and peripheral vision, (c) for fencing, athletes scored higher for speed, strength, and coordination, (d) for shooting, athletes scored higher for spatial awareness, peripheral vision, and coordination, and (e) for equestrian, athletes scored higher for spatial awareness, coordination, and peripheral vision. The extant skills of athletes for the mental skills among the five sports were: (a) for swimming, athletes scored higher for anxiety control and confidence / concentration / emotion regulation / mental toughness, (b) for running, athletes scored higher for relaxation and arousal regulation / confidence / anticipation, (c) for fencing, athletes scored higher for accuracy and concentration / anxiety control / confidence / mental toughness, (d) for shooting, athletes scored higher for arousal regulation and concentration / relaxation / emotion regulation, and (e) for equestrian, athletes scored higher for arousal regulation and anxiety control / confidence / emotion regulation / mental toughness.

Furthermore, the need priorities for the physical skills among the five sports were: (a) for swimming, athletes scored higher for speed, flexibility, and power/acceleration, (b) for running, athletes scored higher for muscular endurance, power/acceleration, and flexibility, (c) for fencing, athletes scored higher for flexibility, cardiovascular endurance, and power/acceleration, (d) for shooting, athletes scored higher for speed, cardiovascular endurance, and flexibility, and (e) for equestrian, athletes scored higher for muscular endurance, power/acceleration, and cardiovascular endurance / speed. The need priorities for the mental skills among the five sports were: (a) for swimming, athletes scored higher for relaxation, anticipation, and accuracy, (b) for running, athletes scored higher for mental toughness, concentration, and accuracy, (c) for fencing, athletes scored higher for anticipation, arousal regulation, and relaxation / emotion regulation, (d) for shooting, athletes scored higher for anxiety control, accuracy, and mental toughness, (e) for equestrian, athletes scored higher for anticipation, relaxation, and anxiety control / confidence.

Running and equestrian sports appear to have the biggest difference between extant skill possession and importance, shown by the average need, while swimming has the lowest difference. It is also interesting to note that in general, the different physical attributes are also rated as less important for swimming and shooting compared to running, where almost every attribute is extremely important, which is probably the cause for the difference.

Co-funded by the Erasmus+ Programme of the European Union

Table 1. Mean scores for extant skills of athletes and identification of needs (Imp: Importance, Pss: Possession, Nd: Need)

	SWIMMING			*RUNNING*			*FENCING*			*SHOOTING*			*EQUESTRIAN*		
	Imp	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**
Physical attributes	**3,75**	**3.60**	**8.28**	**4.23**	**3.81**	**9.25**	**4.04**	**3.75**	**8.53**	**3.88**	**3.57**	**8.77**	**4.05**	**3.61**	**9.25**
Muscular endurance	5.00	4.60	7.00	4.36	3.45	11.09	3.20	3.20	8.20	3.66	3.33	9.66	4.25	3.25	11.50
Cardiovascular endurance	5.00	5.00	5.00	5.00	4.09	9.54	4.40	3.60	10.20	3.33	2.83	10.33	4.25	3.75	9.50
Speed	3.60	2.60	12.20	4.90	3.81	10.72	5.00	4.40	8.00	3.00	2.50	10.50	2.75	2.50	9.50
Flexibility	3.20	2.80	10.20	4.54	3.54	10.90	4.40	3.40	11.20	4.33	3.66	10.00	3.75	3.50	9.25
Strength	4.60	4.20	8.40	4.18	3.63	9.81	3.20	4.20	5.80	3.66	3.33	9.83	3.75	3.50	9.25
Coordination	4.00	4.00	8.00	4.45	4.00	8.81	5.00	4.20	9.00	5.00	4.33	8.33	4.75	4.25	8.25
Power / Acceleration	3.00	2.80	9.60	4.72	3.63	11.09	4.40	3.80	9.20	2.83	2.50	9.83	4.00	3.25	10.50
Peripheral vision	2.20	3.00	6.20	2.81	4.09	5.36	3.20	3.40	7.20	4.33	4.66	5.66	4.00	4.00	8.00
Spatial awareness	3.20	3.40	8.00	3.18	4.09	6.00	3.60	3.60	8.00	4.83	5.00	4.83	5.00	4.50	7.50
Mental attributes	**4.13**	**3.95**	**8.33**	**3.99**	**3.99**	**8.06**	**4.82**	**3.53**	**11.68**	**4.94**	**3.99**	**9.88**	**4.63**	**3.91**	**9.55**
Concentration	4.20	4.20	7.60	3.18	3.81	8.36	5.00	3.80	11.00	5.00	4.16	9.16	4.25	4.00	8.25
Relaxation	4.40	3.40	11.40	4.54	4.36	7.45	4.80	3.40	12.20	5.00	4.16	9.16	4.75	3.75	10.50
Arousal regulation	4.00	4.00	8.00	3.90	4.09	7.36	4.40	3.00	13.40	4.83	4.33	8.00	4.75	4.25	8.25
Accuracy	3.40	3.40	8.80	3.81	3.81	8.27	4.80	4.00	9.40	5.00	3.83	10.83	3.75	3.50	9.25
Anxiety control	4.20	4.40	6.60	3.90	3.90	8.09	5.00	3.80	11.00	5.00	3.66	11.66	5.00	4.00	10.00
Confidence	4.20	4.20	7.40	4.00	4.09	7.63	5.00	3.80	11.00	4.66	3.83	10.16	5.00	4.00	10.00
Emotion regulation	4.20	4.20	7.60	3.81	3.81	8.18	4.80	3.40	12.20	5.00	4.16	9.16	4.75	4.00	9.50
Anticipation	4.20	3.60	9.80	3.90	4.09	7.45	4.60	2.80	14.00	5.00	4.00	10.00	5.00	3.75	11.25
Mental toughness	4.40	4.20	7.80	4.90	4.00	9.81	5.00	3.80	11.00	5.00	3.83	10.83	4.50	4.00	9.00

3. IDENTIFICATION OF LEARNING NEEDS FOR DEVELOPING PENTATHLON COACHES/TRAINERS

Several skills and competencies were identified through the interviews as being important for pentathlon coaches. In particular, it was reported that coaches should be patient, have knowledge and experience for each of the sports but also be cooperative with coaches from the individual pentathlon disciplines, demonstrate caring about both the athlete and the sport. Participants also mentioned that it is valuable to have previous experience as athlete prior to becoming a coach, with experience in pentathlon being ideal. Athletes' perspectives regarding their training needs for becoming coaches evolved from the survey.

Mean scores regarding importance, extant skills, and needs of athletes for each modern pentathlon discipline are presented in Table 1. The Table includes mean scores for the knowledge, team dynamics and management skills factors and the individual items (i.e., all descriptors below each factor), for each of the two rating scales (i.e. importance and possession), but also their product (i.e., need - after reversing scores for possession), as indicative of the prioritization of athletes' needs.

The need priorities for knowledge among the five sports were: (a) for swimming, athletes scored higher for mental training and mentoring, (b) for running, athletes scored higher for mental training and mentoring, (c) for fencing, athletes scored higher for mental training and technical knowledge, (d) for shooting, athletes scored higher for mentoring and physical training, (e) for equestrian, athletes scored higher for physical and mental training.

Additionally, the need priorities for the team dynamics among the five sports were: (a) for swimming, athletes scored higher for communication and leadership, (b) for running, athletes scored higher for communication and leadership, (c) for fencing, athletes scored higher for emotional intelligence and communication, (d) for shooting, athletes scored higher for leadership and empathy, (e) for equestrian, athletes scored higher for empathy and team building.

Finally, the need priorities for the management skills among the five sports were: (a) for swimming, athletes scored higher for time management and self-regulation, (b) for running, athletes scored higher for time management and problem solving, (c) for fencing, goal setting and self-regulation, (d) for shooting, athletes scored higher for time management and conflict resolution, (e) for equestrian, athletes scored higher for time management and problem solving.

For fencing the average needs for both technical knowledge and management skills appear to be higher than the other sports, indicating that the athletes in this field have higher expectations for their trainers.

Table 2. Mean scores for learning needs for developing into coach/trainer (Imp: Importance, Pss: Possession, Nd: Need)

	SWIMMING			*RUNNING*			*FENCING*			*SHOOTING*			*EQUESTRIAN*		
	Imp	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**
Knowledge	5.00	4.60	7.00	4.88	4.43	7.55	4.64	3.68	10.64	4.86	4.26	8.36	4.85	4.25	8.45
Technical knowledge	5.00	4.80	6.00	5.00	4.90	5.45	4.80	4.00	9.60	5.00	4.83	5.83	4.75	4.75	5.75
Tactical knowledge	5.00	4.80	6.00	5.00	4.54	7.27	4.80	3.60	11.60	5.00	4.33	8.33	5.00	4.50	7.50
Physical Training	5.00	5.00	5.00	5.00	4.72	6.36	4.20	3.80	9.00	4.33	3.83	9.33	4.75	3.75	10.75
Mental training	5.00	4.20	9.00	4.72	3.90	9.81	4.80	3.40	12.20	5.00	4.33	8.33	4.75	4.00	9.50
Mentoring	5.00	4.20	9.00	4.72	4.09	8.90	4.60	3.60	10.80	5.00	4.00	10.00	5.00	4.25	8.75
Team dynamics	4.53	4.06	8.73	4.60	4.02	8.93	4.43	4.06	8.13	4.49	4.02	8.66	4.66	4.25	8.04
Leadership	4.80	4.00	9.60	4.45	3.90	9.09	4.00	3.80	7.80	4.33	3.83	9.16	4.75	4.50	7.00
Team building	4.80	4.20	8.60	4.81	4.18	8.63	4.80	4.20	8.40	4.50	4.16	8.00	5.00	4.25	8.75
Cooperation	4.40	4.20	7.80	4.90	4.18	8.90	4.40	4.20	7.20	4.83	4.33	7.83	5.00	4.75	6.25
Communication	4.60	3.80	10.20	4.81	3.81	10.45	4.80	4.00	9.40	4.83	4.16	8.83	4.75	4.25	8.25
Empathy	4.40	4.20	7.80	4.45	4.18	7.90	4.20	4.40	6.40	4.33	3.83	9.16	4.25	3.75	9.50
Emotional intelligence	4.20	4.00	8.40	4.18	3.90	8.63	4.40	3.80	9.60	4.16	3.83	9.00	4.25	4.00	8.50
Management skills	4.50	4.16	8.33	4.61	4.23	7.79	4.40	3.73	9.96	4.41	4.02	8.55	4.66	4.20	8.29
Time management	4.80	3.80	10.80	4.81	4.27	8.27	4.20	3.60	10.20	4.83	4.00	9.66	4.75	4.00	9.50
Decision making	4.20	4.20	7.60	4.45	4.18	8.00	4.60	4.00	9.20	4.16	4.00	8.16	4.50	4.25	7.75
Goal setting	4.80	4.80	5.80	4.81	4.54	6.90	4.80	3.60	11.80	4.66	4.16	8.33	4.75	4.50	7.00
Self-regulation	4.60	4.00	9.40	4.54	4.03	7.72	4.40	3.40	11.40	4.00	3.83	8.50	4.75	4.50	7.00
Problem solving	4.40	4.20	8.00	4.45	4.09	8.18	4.40	3.60	10.00	4.33	4.16	7.83	4.75	4.00	9.50
Conflict resolution	4.20	4.00	8.40	4.63	4.27	7.72	4.00	4.20	7.20	4.50	4.00	8.83	4.50	4.00	9.00

4. CHALLENGES AND PROSPECTS IN SPORT / DUAL CAREER

The sport of modern pentathlon has never gained a big popularity in Estonia and almost completely died down after the top athletes stepped down a couple decades ago. However, thanks to specific interested individuals the sport lives on, with every year new youth coming into it, while a couple move on to the more specific fields inside pentathlon – overall the numbers appear to be going up.

Funding has always been a difficult topic for all athletes, with almost 80 percent of young athletes stopping their training after the end of high school due to uncertainty in sport as a career choice. While the variety of different stipends and other funds has kept growing, no such funds really exist for the sport specifically. The onus to get these is on the athletes themselves, who need to actively search and work for all the opportunities, to get the funding piece by piece.

While Health Insurence Fund helps fund indepth health examination and through that there is access to very qualified sports doctors, many young and older athletes find that the access is too limited, a yearly visit is not enough for competitive athletes. The number of specialists is low, making waiting times long and things such as regular blood tests have to all be paid out of pocket.

There currently are 11 trainers for modern pentathletes in Estonia, however only one has a higher diploma as a trainer having the EKR level 5 – while a total of 8 levels exist. This indicates a severe lack of trainers with qualifications to train athletes beyond the early stages and into the competitive.

Evidence regarding individual pentathlon disciplines came from the survey. The mean scores for functional and personal challenges and obstacles for athletes in their respective fields are summarized in Table 3. The results for the functional challenges/obstacles among the five sports were: (a) for swimming, athletes scored higher for organizational structures in sport and lack of time/energy, (b) for running, athletes scored higher for lack of time/energy and organizational structures in sport, (c) for fencing, athletes scored higher for financial burden and lack of time/energy, (d) for shooting, athletes scored higher for limited access to training facilities and transportation, and (e) for equestrian, athletes scored higher for financial burden and transportation.

The results for the personal challenges/obstacles among the five sports were: (a) for swimming, athletes scored higher for stress, lack of motivation/commitment, and injuries, (b) for running, athletes scored higher for injuries, lack of motivation/commitment, and stress, (c) for fencing, athletes scored higher for stress, injuries, and emotional stability, (d) for shooting, athletes scored higher for emotional stability, stress, and family life demands, (e) for equestrian, athletes scored higher for injuries, lack of motivation/commitment, and stress.

Table 3. Mean scores for functional and personal challenges and obstacles by individual discipline

	SWIMMING	*RUNNING*	*FENCING*	*SHOOTING*	*EQUESTRIAN*
Functional	**2,43**	**2.04**	**2.50**	**3.38**	**3.08**
Lack of time / energy	3.40	2.90	3.00	2.00	2.25
Limited access to training facilities	1.40	1.90	2.00	4.00	3.25
Transportation	1.60	1.45	2.40	3.83	3.50
Financial burden	2.80	1.90	3.00	3.66	3.75
Lack of equipment	1.80	1.54	2.60	3.33	3.25
Organizational structures in sport	3.60	2.58	2.00	3.50	2.50
Personal	**2.82**	**2.14**	**2.80**	**1.81**	**1.69**
Stress	4.20	2.81	4.20	2.16	2.00
Injuries	3.40	3.54	3.60	1.66	2.50
Lack of motivation / commitment	3.60	3.00	3.20	1.83	2.25
Emotional stability	3.20	2.27	3.60	2.50	1.25
Media / social media	1.60	1.09	1.40	1.16	1.00
Peer pressure	2.00	1.36	1.80	1.66	1.25
Parental pressure	2.20	1.54	2.40	1.66	1.75
Pressure from coach	2.60	1.72	3.20	1.66	1.50
Family life demands	2.60	2.00	1.80	2.00	1.75

With only 47 current athletes and 11 trainers, the sport is currently very small in Estonia, which also limits the opportunities to pursue a career in it. The small size and the sports current life in Estonia however also indicate the high level of importance interested individuals have for the sport and a huge potential of growth. The results for the athlete's awareness of Modern Pentathlon are summarized in Table 4. Overall, the results showed that the athlete's awareness for Modern Pentathlon was better for the fencing and the shooting, the intention of the involvement was low for all sports, and the prospects were higher for fencing.

Table 4. Prospects for a dual career in modern pentathlon.

	SWIMMING		RUNNING		FENCING		SHOOTING		EQUESTRIAN		TOTAL
	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	%YES
1. Have you ever heard about the Modern Pentathlon	3	2	7	4	5	0	5	1	3	1	74%
2. Have you ever looked for information regarding the Modern Pentathlon	0	5	0	11	2	3	1	5	0	4	1%
3. Do you know what sports comprise the Modern Pentathlon	2	3	4	7	3	2	3	3	1	3	41%
4. Have you ever considered becoming involved in the Modern Pentathlon as athlete	0	5	0	11	1	4	1	5	0	4	1%
5. Would you be interested to eventually become involved with Pentathlon as a trainer in your sport	1	4	1	10	1	4	1	5	0	4	1%
recreational / competitive / both	1/0/0		0/0/1		0/0/1		1/0/0		X		
6. Would you consider as a dual career opportunity as a Modern Pentathlon trainer	1	4	1	10	1	4	0	6	0	4	1%
recreational / competitive / both	1/0/0		0/0/1		0/0/1		X		X		
7. How feasible you think it is to combine in the future your career with a career in Pentathlon	0	4	3	8	0	5	0	6	0	4	1%
8. Do you know if there is a pentathlon club in your area	1	4	2	9	1	4	1	5	0	4	1%
9. Do you know anyone doing pentathlon recreationally	1	4	1	10	4	1	2	4	2	2	32%
10. Do you know anyone doing pentathlon competitively	1	4	1	10	4	1	2	4	2	2	32%
11. Could you see in a prospect for a career in Pentathlon (as a secondary occupation)	0	5	1	10	2	3	1	5	0	4	1%
12. Are you willing to get appropriate education/training to purse a Pentathlon-related job (as a secondary occupation)?	1	4	1	10	2	3	1	5	0	4	1%

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BEST PRACTICES

BEST PRACTICE 1

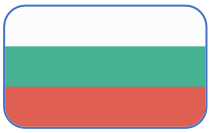
Name of the Project/Organization	**The City of Tallinn**
Type of organization	City government
Country	Estonia
Description of the practice (project or organisation)	The city of Tallinn offers financial aid to athletes and their trainers who train in Olympic sports or sports that the city has shown interested in developing. The financial support is a dedicated sum for competitions, training camps and other sports related expenses.
Relevance to the EHPARP project	Modern pentathlon is an Olympic sport and is one of the supported fields. Given how expensive, especially for youth athletes, a sport like pentathlon can, be getting a sports camp or a piece of paid for is extremely important.
Impact of the practice	- Youth athletes can relieve some financial pressure.

	- Getting awarded the financial support is public and slightly prestigious for youth athletes. Financial impact very short term due to a single time payment.
References, sources	https://www.tallinn.ee/est/sport/Noorsportlaste-toetamine-2

BEST PRACTICE 2

Name of the Project/Organization	**Estonian Health Insurance Fund**
Type of organization	Public institution
Country	Estonia
Description of the practice (project or organisation)	The preventative medicine project " Youth athlete health check to prevent sports related health risks" allows young athletes who train at least 6 hours more than simply physical education lessons to get medical examinations by a qualified sports doctor for only the visiting fee every other year. Those who train at least 10 hours more get to get a more indepth examination, with not only an exercise electrocardiogram with consultation, but also maximum oxygen consumption test with it and can do it for the visiting fee once every year.
Relevance to the EHPARP project	All of the modern pentathlon sports separately, but also it itself qualify to receive this health examination. This saves young athletes a lot of necessary costs every year, while directly supporting healthy sportsmanship and better understanding of their bodies.
Impact of the practice	- Saves reasonably big costs for all youth athletes who train seriously. - Access and promotion of a hugely important part of sportsmanship – working with qualified doctors and physiotherapists, who know the effects of training. - Consultations help plan further training for the youth athletes - Promotes healthy sportsmanship habits.
References, sources	https://www.terviseuuringud.ee/noorsportlaste-tervisekontroll/

RESEARCH REPORT - BULGARIA



1. PENTATHLON IN BULGARIA – STATE OF THE ART

Modern pentathlon is composed of five disciplines as athletes test their rounded skillset in fencing, swimming, riding, shooting and running. The latter two are combined in the final event of the competition. The Bulgarian Modern Pentathlon Federation was established in 1954. The beginning was set by Mr. Lyuben Tsvetkov, then head of the "Applied Sports" department at the Supreme Committee for Physical Culture and Sports at the Council of Ministers. He was sent to Hungary to get acquainted in detail with this new sport for the country. After his return to Bulgaria, he organized a training camp, in which about 20 people got familiar with the basics of modern pentathlon. At the end of this camp, the first Republican Championship in modern pentathlon was held. It involved various athletes from different places, such as officers, students, fencers, horsemen, swimmers, athletes and more. The first national championship is for men only and 19 competitors take part in it. From that moment on, modern pentathlon began its development in Bulgaria. Later, in 1957, annual international competitions began in Armenia, Romania and also in Bulgaria. Since the 1960s, the geography of international pentathlon competitions has expanded and participation in competitions in Hungary, the GDR, Czechoslovakia, Poland, the USSR and others has begun. Thus, the pentathlon appears more and more boldly on the international sports arena, and the first successes are not late. The first major success at the international sports arena was the bronze medal of Emanuil Azmanov at the World Youth Championships in Budapest in 1969, as the Bulgarian team ranked 4th. At the World Cup in Kiev in 1985 third place achieved Velizar Iliev. Gerard Levonian achieved the same success, a bronze medal, at the World Youth Championships in Egypt in 1988. The youngsters have repeatedly performed very well at the World Championships, where the Bulgarian national team has so far won one third place, three fourth places, two fifth places and three sixth places. The pinnacle, however, was winning the title of World Champion in the Modern Pentathlon Relay in 1992 in Zielona Góra, Poland, with the team consisting of Assenov, Andonov and Truhchev. The greatest success of the Bulgarian men's pentathlon was achieved in 2001 in the person of Tsanko Hantov, who won third place, a bronze medal at the World Championships in Millfield. The team has twice won 4th place, twice 5th place, once 6th place at the World championships. The gold medals of Velizar Iliev at the Druzhba tournaments in 1985 and in Bucharest and 1986 in Székesfehérvár have great value, when he defeated all the young pentathletes of Hungary, the USSR, Poland, Czechoslovakia and other countries.[1]. Currently the best athletes of the Bulgarian Modern Pentathlon Federation are[2]:

[1] https://www.pentathlon-bg.com/page_6.html
[2] https://www.pentathlon-bg.com/

Svetla Zgurova is currently a student at the National Sports Academy "Vasil Levski" and she is the daughter of the multiple state champion in swimming, a leading figure in our water rescue, and now a coach at the NSA - Natalia Stoyanova. Her most significant results are:

- ***Gold medal at the European and World Championships for girls under 17 2019***
- ***5th place European Championship for girls under 17 individually 2018***
- ***5th place European Championship for girls under 17 mixed relay 2018***
- ***4th place European Cup for girls under 19 2018***

Zornitsa Stoilova is among Bulgaria's women's hopes for the World Cup in Sofia. She is currently a student at the National Sports Academy "Vasil Levski" in and three coaches take care of her training - Vladimir Kuzmanov (modern pentathlon), Kamelia Edreva (horseback riding) and Velko Bratanov (fencing). Thanks to her mother she first chooses swimming and then moves to modern pentathlon thanks to her a coach who makes her warm up by running before swimming. So more and more often she runs before swimming. Her most significant results are:

- ***14th place at the 2018 Buenos Aires Youth Olympic Games***
- ***5th place European Championship for girls under 19 individually***
- ***6th place European Championship for girls under 19 mixed relay***
- ***1st place European Cup for girls under 19***

Yavor Peshleevski, one of our sports talents, is a modern pentathlete, and he applied for a good future back in 2014, when he finished fifth at the Youth Olympic Games in Nanjing (China). Although only 24 years old, Peshleevski has performed successfully at the men's world championships. He competes individually in the relay in tandem with Todor Mihalev. The two achieved incredible success at the world championships in Mexico, taking third place. The medal is the first for Bulgaria from such a forum in 17 years. His biggest dream is to participate in the Summer Olympics in Tokyo in 2020. His most significant results are:

- ***3rd place at the 2018 World Men's Championship 2018***
- ***6th place at the Men's World Championship 2017***
- ***4th place at the European Youth Championship - Relay 2017***
- ***5th place at the European Youth Championship individually***
- ***5th place - IOC 2014***

Todor MIKHALEV is a Bulgarian modern pentathlete. He participated at the 2018 World Modern Pentathlon Championships, winning a medal. His most significant results are:

- ***3rd place at the 2018 World Men's Championship 2018***
- ***6th place at the Men's World Championship 2017***
- ***4th place at the European Youth Championship - Relay 2017***
- ***5th place at the European Youth Championship - Relay 2016***

Hristo Panayotov is an athlete from the sports club "Diana - modern pentathlon and fencing" - Yambol.
He has been playing modern pentathlon for 6 years with coaches Krassimir Simeonov and Stanimira Chifudova-Doycheva. His most significant results are:

- ***Qualified for the 2018 Youth Olympic Games in Buenos Aires.***
- ***16th place World Championship for youth under 19 individually***
- ***6th place European Championship for girls and youth under 19 mixed relay***
- ***3rd place Olympic qualification for IOC-Prague***

1.A DESCRIPTION OF THE EXISTING POLICIES IN PARTNER COUNTRY REGARDING THE DUAL CAREER

Athletes often face challenges to combine their sporting career with education. According to international research, one-third of all participants from sports each year consider that sport takes too much of their time. The main challenges for them are the balance between sports training and education and, at a later stage of life, the balance between sports training and employment and the moment of end of their sporting career.
In dual career (DC), the profile of the athletes is quite different[3]:
- When the athlete quits compulsory education due to its sport activities and is recommended to carry on his/her education at a higher level or higher education as a dual career.
- When the athlete finishes his/her sports career and wants to find a place in the life of the community and to continue his/her life with a dual career opportunity.

For these challenges, the athlete must be stimulated and encouraged, even when he/she has completed the compulsory education that in most of the countries is not sufficient to find a suitable job opportunity. The second stage should happen smoothly and can be planned in as much detail as possible for the moment when the sports career is over, but in practice it is difficult to predict due to injuries and other important events that can bring this moment much closer to the reality of the athletes. In the Bulgarian professional sports the main focus has always been winning cups, medals and achieving high sports results and there is no legal framework for a dual career and sustainable government policy in this area. The status of a "student – athlete" is not clearly defined and this puts those students, and their careers, seriously affected. In June 2016, the Bulgarian Minister of Youths and Sports declare its intention to make the DC one of the key issues during the Bulgarian Presidency of the EU in 2018[4]. Many stakeholders declare their full support the development and implementation in Bulgaria the DC Guidelines, although few of them read the Guidelines, or have clear idea what the DC is. Another misunderstanding regards the connection of DC with a post athletic career in the sport field (i.e. becoming trainers, coaches, sport teachers, work in the Police, Army or Security Companies), that is often preferred for career development by former professional athletes after completing their sport career or for talents that have failed to materialize for one reason or another.

[3] https://ec.europa.eu/assets/eac/sport/library/documents/dual-career-guidelines-final_en.pdf
[4] http://dc4ac.eu/Actual%20status%20of%20DC%20in%20participating%20countries.pdf

Participation in sport and physical activity is considered as an important part of a healthy life and different countries have utilized it with varying success not just to achieve sport-specific objectives but also to improve public health. A key factor for having a physically active nation is the sport policies that a country has developed. In Europe, the differences in sport participation vary immensely with southern- and south-eastern European countries appearing as least active. Bulgaria is as one of the countries with lowest levels of sport and physical activity in the EU at regular basis /only 2% of the population, based on Eurobarometer 2018/ and this is why the sport related services are still not the most attractive ones for professional development and quality career opportunities for the target group of the present research. A positive change can be highlighted of observing increasing interest of the related with the sport sector and healthy lifestyle related services, but the society is still too far away from these attitudes[5].

Bulgarian sport governance

The fundamental legislation principles related to sport and physical activity in Bulgaria are established in The Constitution[6] and The Sports Act[7]. The Constitution of The Republic of Bulgaria states in Chapter Two, Section Fundamental Rights and Duties of Citizens, Article 52. (3) that: 'The State shall protect the health of all citizens and shall promote the development of sports and tourism.' (Constitution of the Republic of Bulgaria, 1991). In line with the egalitarian statement in the Constitution, The Sports Act [1996] in Article 2, Section 1 [2014] defines the health of all people as the primary goal. It states that 'the aim of physical education and sport is the betterment of the nation's health and physical activity through systematic engagements with physical exercises and sport for people of all ages' (Law on Physical Education and Sport, 1996). The legal act that regulates the public relationships concerning the physical education and sports in Bulgaria is the Bulgarian Physical Education and Sports Act (PESA)[8]. It lists the state's competence towards sports, regarding all the aspects of sport organizations, from grassroots sport to elite and Olympic athletes, from sport organizations work to education of experts and financed projects. In accordance to Art. 7 from the PESA, the basic directions of the national policy in the field of sports are approved by the Council of Ministers (CM), that as well annually provides the necessary funds for the development of the physical education and sports due to the State Budget Act of Republic of Bulgaria, where financing of the sports activity is stipulated. PESA distinguishes amateur and professional athletes; their status is determined by the regulations accepted by the relative sports federations. The criteria for distinguishing the types of athletes is whether they receive a financial reward for their sport activity or not. Amateur do not receive remunerations, while professional athletes receive remuneration on the grounds of a labour contract or due to their professional activity, in accordance to art. 13 of the Ordinance.

The main The Sports Act recognises the creation of the necessary conditions for regular practice of sport and physical exercises and the raising of the nation's sporting prestige as a priority field

[5] https://ec.europa.eu/sport/news/2018/new-eurobarometer-sport-and-physical-activity_en
[6] https://www.parliament.bg/bg/const
[7] http://mpes.government.bg/Pages/Documents/Law/default.aspx
[8] http://mpes.government.bg/Documents/Documents/Zakoni/2018/ZFVS_NEW.pdf

in the state's and municipalities' social policy. The Sports Act regulate investments in sports infrastructure in Bulgaria by allowing long-term investments to be made in public sports facilities by sports clubs, associations or unions of sports clubs registered as non-for profit organisation through the 25 extended lease period (of up to 30 years) provided that a thorough investment plan has been provided. The lease period in the current Sports Act is 10 years. Two notions can be made here; first, similarly to the main objective assertion in the National Strategy for Sport[9], both sport participation and elite sport are considered priorities, which on the one hand signals for synchronised content in the two most important documents arranging the relations in and the development of sport but on the other it raises the question of how realistic the achievement of those is, when it comes to policy implementation. Secondly, recognition of both the state's and municipalities' role in the sports system is evident. The state is responsible for the provision of opportunities for sport for all, youth sport, school and university sport as well as elite performance. The building and maintenance of state-owned sports facilities, anti-doping control, support for and regulation on national sports organisations also fall within the powers of the state through the Ministry of Youth and Sport.

PESA recognizes three basic kinds of sports organizations in Republic of Bulgaria, as listed below.

1) Sports Club. Voluntary associations of citizens, registered as non-profit legal persons, which develop and promote physical education and sport and carry out training and competition activities of one or more sports (Art. 11, par. 1 from PESA). Sports clubs must be registered as joint-stock companies - professional sports clubs, or as non-profit associations - professional sports clubs. After registration as a legal entity, the sports clubs are obliged to apply for membership in the respective federation (Art.10, pat.6 from PESA).
2) Sports Federations. Voluntary associations of sports clubs from one or similar type of sport, which coordinate the development, practising and administration of the respective sport on national level and represent their members before the state and international sports organisations. (Art. 14, par.1 from PESA). It is an obligation of the sports federations to be granted a license by the competent state body. Together with gaining a sport license, the respective sports organization receives some powers in the field of the sports activity developed, listed in Art 19 from PESA.
3) 3) National Sports Organizations. Voluntary associations of sports clubs and/or sports federations which coordinate their activities in a specific subject of activity in the system of physical education, sports and social tourism, and interact with the state and with the international sports organizations in forming and implementing the national sports policy. National sports organizations shall be registered as non-profit legal persons for the public benefit and participate principally in the development, implementation and reporting the results of the fulfilment of the National Programme for the development of physical education and sports.

Other related documents on sport in Bulgaria are:

[9] http://mpes.government.bg/Documents/Documents/Strategii/Strategia_2012-2022.pdf

- National Development Programme 2020:[10];
- National program for the development of physical education and sports 2013 – 2016[11].

2. IDENTIFICATION OF THE EXTANT SKILLS AND NEEDS OF ATHLETED IN INDIVIDUAL PENTATHLON DISCIPLINES

Several skills and competencies were identified through the interviews as being important for pentathlon athletes. This included knowledge of each sport-experience, stamina, concentration, power, speed, technique of each sport, discipline, mobility, reaction speed, and importantly loyalty. More elaborated results regarding the skills and competencies required in pentathlon, and accordingly the needs of athletes from the individual pentathlon disciplines, emerged through the survey with athletes of the individual pentathlon disciplines.

Mean scores regarding the importance of physical and mental skills of the sport, the extant skills of athletes, and the training needs of athletes for each modern pentathlon discipline are presented in Table 1. The Table includes mean scores for the physical and mental skills factors (i.e., physical attributes and mental attributes) and the individual items (i.e., all descriptors below each factor), for each of the two rating scales (i.e. importance and possession), but also their product (i.e., need - after reversing scores for possession), as indicative of the prioritization of athletes' needs.

The extant skills of athletes for the physical attributes among the five sports were:

- Shooting – Muscular Endurance, Cardiovascular endurance and Flexibility;
- Fencing – Spatial awareness and Speed;
- Swimming – Coordination, Power / Acceleration and Peripheral vision;
- Equestrian – Power / Acceleration, Peripheral vision, Spatial awareness;
- Running – Speed and Power / Acceleration.

Additionally, the extant skills of athletes for the mental skills among the five sports were:

- Shooting – Arousal regulation, Accuracy, Anxiety control, Confidence, Emotion regulation and Mental toughness;
- Fencing – Concentration and Emotion regulation;
- Swimming – Emotion regulation, Anticipation and Mental toughness;

[10] https://www.eufunds.bg/archive2018/archive/documents/1357828564.pdf
[11] http://mpes.government.bg/PrintableVersion.aspx?evntid=YcUxz96FPcA%3d

- Equestrian – Confidence and Mental toughness;
- Running –Concentration.

Overall, the need priorities for the physical skills among the five sports are:

- Shooting – Coordination, Muscular Endurance and Speed;
- Fencing – Power / Acceleration and Flexibility;
- Swimming – Muscular Endurance, Cardiovascular Endurance and Flexibility;
- Equestrian –Muscular Endurance, Cardiovascular endurance and Speed;
- Running – Cardiovascular Endurance and Peripheral vision.

Additionally, the need priorities for the mental skills among the five sports are:

- Shooting – Concentration, Relaxation and Anticipation;
- Fencing – Arousal regulation, Accuracy and Confidence;
- Swimming – Accuracy, Anxiety control and Confidence;
- Equestrian –Relaxation, Arousal regulation and Concentration;
- Running – Relaxation, Arousal regulation and Mental toughness.

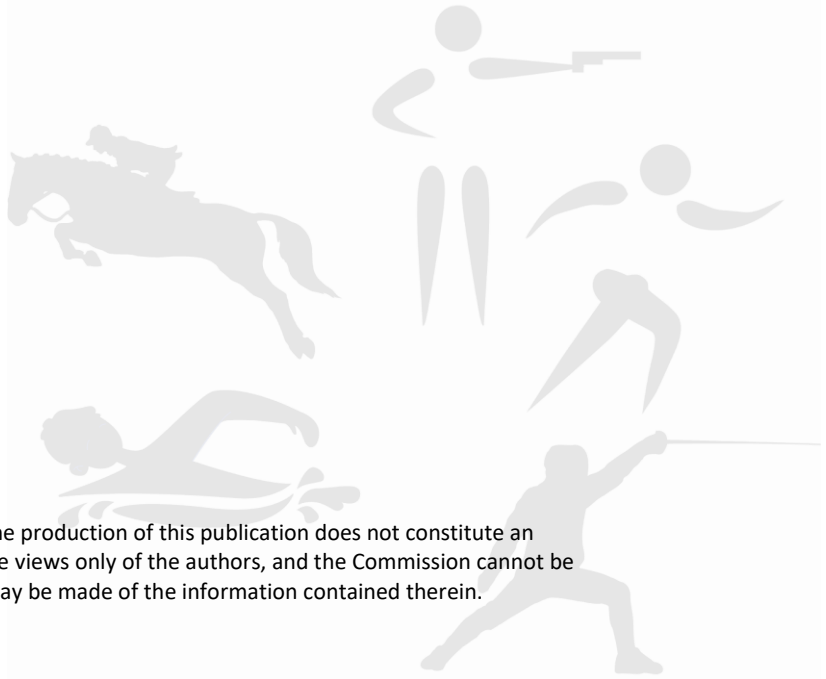


Table 1. Mean scores for extant skills of athletes and identification of needs (Imp: Importance, Pss: Possession, Nd: Need)

	SWIMMING			*RUNNING*			*FENCING*			*SHOOTING*			*EQUESTRIAN*		
	Imp	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**
Physical attributes	**3,96**	**3,59**	**8,63**	**3,96**	**3,96**	**7,89**	**3,26**	**3,25**	**8,80**	**2,87**	**3,44**	**7,08**	**3,84**	**3,83**	**7,87**
Muscular endurance	4,33	3,67	9,66	3,33	3,33	8,66	3.38	3,13	9,62	3.85	2,75	10	3.84	3,85	7,8462
Cardiovascular endurance	4	3,67	8,33	4	4	8	3,25	3	9,5	2,75	2,75	8,5	4,23	3,85	8,76
Speed	4	3	10,66	4,67	4,67	6	3,13	3	9,12	2,75	2,75	9	3,85	4	7,15
Flexibility	4	3,67	8,33	4	3,67	9,33	3,13	3	9,25	2,50	3	7,5	3,85	3,69	8,46
Strength	4	3,33	9,33	3,33	3,67	8	3,25	3,25	8,87	2,50	3,25	7	3,77	3,77	7,76
Coordination	4,33	2,67	13,33	4	4	8	3,5	3,50	8,5	2,50	3,75	6	3,77	3,85	7,30
Power / Acceleration	3,67	3,33	8,66	4,33	3,67	9,66	3,25	3,5	7,87	2,25	4,25	4	4	4,23	6,46
Peripheral vision	3,67	4	5,66	4	4	8	3,25	3,5	8,12	3	4,25	5,25	3,62	3,62	8,76
Spatial awareness	3,67	5	3,66	4	4,67	5,33	3,25	3,38	8,37	3,75	4,25	6,5	3,62	3,62	8,30
Mental attributes	**5,00**	**4,89**	**5,55**	**4,18**	**3,63**	**9,96**	**3,32**	**3,19**	**9,19**	**4,00**	**4,47**	**6,16**	**3,49**	**3,31**	**9,00**
Concentration	5	4,67	6,66	4	4,33	6,66	3,13	3,25	8,5	4,25	4	8	4,08	3,69	8,92
Relaxation	5	4,67	6,66	4,33	3,67	9,66	3,13	3,13	8,87	4,5	3,75	10	3,92	3,38	9,84
Arousal regulation	5	5	5	4,67	3	14	3,13	3	9,25	4,25	4	8,25	4	3	12,2
Accuracy	5	5	5	4,67	3,33	12,66	3,25	3	9,75	3,75	4,5	5,75	3,15	3,15	7,92
Anxiety control	5	5	5	4,33	3	13	3,5	3,13	9,87	3,5	4,5	5,5	3	3,38	7,23
Confidence	5	5	5	4,67	3,67	10,6	3,63	3,13	10,25	4	4,75	5	3,54	3,54	8,92
Emotion regulation	5	5	5	4	4,33	6,66	3,5	3,38	9	4	5	4	3,23	3,54	7,69
Anticipation	5	4,67	6,66	3	3,67	7	3,38	3,38	8,875	3,5	5	3,5	3,31	3,15	8,84
Mental toughness	5	5	5	4	3,67	9,33	3,25	3,38	8,375	4,25	4,75	5,5	3,23	3	9,38

3. IDENTIFICATION OF LEARNING NEEDS FOR DEVELOPING PENTATHLON COACHES/TRAINERS

The main skills and competencies that were mentioned during the interviews as important for pentathlon coaches are to be a mentor, technical supporter, motivator, leader, psychologist, and maybe most importantly, as a role model for the athlete. Also a good pentathlon coach has to be positive, enthusiastic, trusting, focused, goal-oriented, knowledgeable, observant, respectful, patient and a clear communicator. Many interviewees added that they would rely more on the coach's skills if he/she had previous experience and significant sporting success in the sport he/she coached.

Mean scores regarding importance, extant skills, and needs of athletes for each modern pentathlon discipline are presented in Table 1. The Table includes mean scores for the knowledge, team dynamics and management skills factors and the individual items (i.e., all descriptors below each factor), for each of the two rating scales (i.e. importance and possession), but also their product (i.e., need - after reversing scores for possession), as indicative of the prioritization of athletes' needs.

Overall, the need priorities for the knowledge among the five sports are:

- Shooting – Technical knowledge and Tactical knowledge;
- Fencing – Technical knowledge, Tactical knowledge, Mental training and Mentoring;
- Swimming – Physical Training and Mental training;
- Equestrian – Physical Training and Mental training;
- Running – Mentoring, Mental training and Technical knowledge.

Additionally, the need priorities for the team dynamics among the five sports are:

- Shooting – Communication and Empathy;
- Fencing – Leadership and Team building;
- Swimming – Leadership, Team building and Cooperation;
- Equestrian – Team building and Cooperation;
- Running – Team building and Cooperation.

Finally, the need priorities for the management skills among the five sports are:

- Shooting – Goal setting, Decision making and Conflict resolution;
- Fencing – Problem solving, Self-regulation and Goal setting;
- Swimming – Conflict resolution, Goal setting, Self-regulation and Problem solving;
- Equestrian – Conflict resolution, Goal setting, Self-regulation and Problem solving;
- Running – Conflict resolution, Goal setting and Self-regulation.

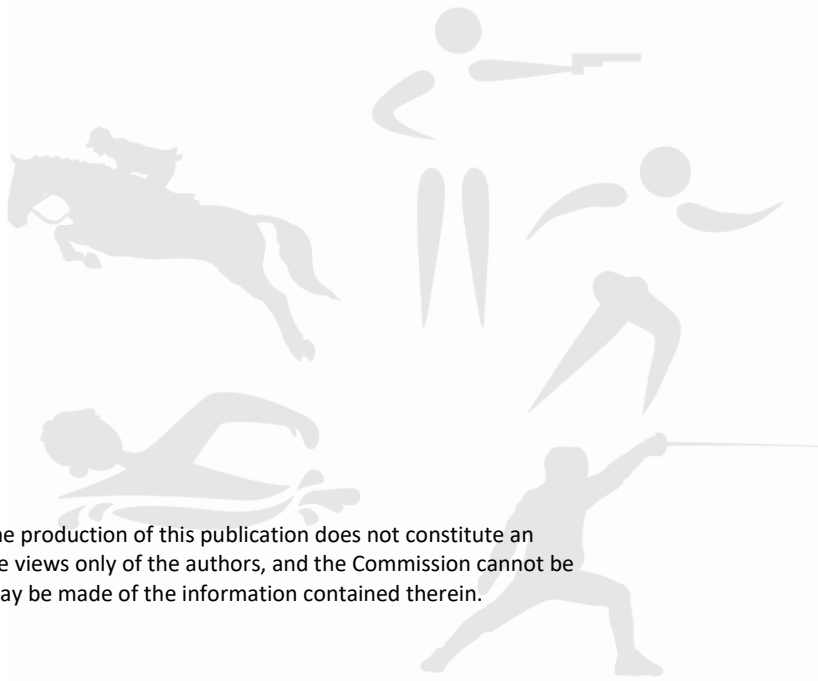


Table 2. Mean scores for learning needs for developing into coach/trainer (Imp: Importance, Pss: Possession, Nd: Need)

	SWIMMING			*RUNNING*			*FENCING*			*SHOOTING*			*EQUESTRIAN*		
	Imp	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**
Knowledge	**4,53**	**4,26**	**7,73**	**4,13**	**3,67**	**9,93**	**3,50**	**3,18**	**9,87**	**3,65**	**3,55**	**8,75**	**3,69**	**3,43**	**9,38**
Technical knowledge	4,33	3,67	10,00	4,33	3,33	11,333	3,38	3,13	9,75	3,5	3,5	8,75	3,62	3,38	9,31
Tactical knowledge	4,67	3,67	10,66	4,33	3,67	10,333	3,5	3,25	9,50	3,25	3,5	8,25	3,62	3,46	9,08
Physical Training	4,67	4,33	7,66	3,33	4,67	4,667	3,5	3,13	10,00	3,75	3,5	9,25	3,62	3,62	8,84
Mental training	4,67	4,67	6,00	4,33	3,67	10,333	3,63	3,13	10,37	4	3,5	9,25	3,92	3,54	9,46
Mentoring	4,33	5	4,33	4,33	3	13,000	3,5	3,25	9,75	3,75	3,75	8,25	3,69	3,15	10,23
Team dynamics	**4,33**	**4,55**	**6,22**	**4,61**	**3,61**	**11,16**	**3,37**	**3,36**	**8,87**	**3,87**	**3,92**	**7,71**	**3,58**	**3,23**	**9,54**
Leadership	4,33	4,67	5,66	5	3	15,00	3,63	3,38	9,62	4	4	7,50	3,54	3,15	9,77
Team building	4	4,33	6,66	4,67	2,67	15,33	3,5	3,38	9,12	3,75	3,5	9,00	3,77	2,85	11,23
Cooperation	4	4,67	5,66	4,33	3,67	10,33	3,5	3,13	9,87	4	3,75	8,75	3,77	3	11,00
Communication	4,33	4,33	7,00	4,33	4,33	7,66	3,25	3,5	7,87	3,5	3,75	7,50	3,62	3,31	9,54
Empathy	4,67	4,33	7,66	4,33	4	8,66	3,25	3,38	8,50	4	4,25	6,75	3,46	3,54	7,92
Emotional intelligence	4,67	5	4,66	5	4	10,00	3,13	3,38	8,25	4	4,25	6,75	3,31	3,54	7,77
Management skills	**4,83**	**4,50**	**7,33**	**4,66**	**4,11**	**9,11**	**3,50**	**3,25**	**9,41**	**4,29**	**4,37**	**7,08**	**3,58**	**3,43**	**8,84**
Time management	5	4,67	6,66	5	4,67	6,66	3,25	3,38	8,50	3,75	4,5	5,50	3,62	3,38	8,84
Decision making	4,67	4,33	8,00	4,33	4,33	7,66	3,5	3,38	9,00	4,25	4,25	7,75	3,77	3,46	9,38
Goal setting	5	4	10,00	5	4	10,00	3,75	3,25	10,12	4	4,25	7,25	3,77	3,62	8,54
Self-regulation	5	5	5,00	5	3,67	11,66	3,63	3,38	9,37	4,5	4,5	7,00	3,62	3,23	9,61
Problem solving	4,67	4,67	6,33	5	3,67	11,66	3,5	3,25	9,25	4,75	4,5	7,00	3,23	3,46	8,08
Conflict resolution	4,67	4,33	8,00	3,67	4,33	7,00	3,38	2,88	10,25	4,5	4,25	8,00	3,46	3,46	8,61

4. CHALLENGES AND PROSPECTS IN SPORT / DUAL CAREER

4.A CHALLENGES

Sports and physical activity are a major part of social activities in the field of public relations. Their implementation is a means of education and a healthy lifestyle. The sport is an integrating factor that teaches tolerance and acceptance of the differences between people from the earliest childhood. In the last 30 years, the system of physical education and sports has fallen into a crisis, which is expressed in limiting the reach of children, adolescents, adults and disadvantaged people in the practice of sports and social tourism and the representation of elite athletes in international events. The state of the sports in our country is a natural result of political, economic and social changes in society.

Interviewees expressed concern about:

1. Insufficient financial and human resources;

2. Obsolete, depreciated and poorly equipped material and technical base;

3. Deficit of highly qualified sports pedagogues;

4. Low degree of coherence and interaction between, competent state institutions, local authorities and sports organizations.

Coaches and athletes in modern pentathlon also pointed out the following positive results in the last 30 years:

1. The financial resources provided by the state and the municipalities have been increased provide for the implementation of sports development programs;

2. The preferences enjoyed by sportsmen have increased organizations in carrying out their activities;

3. Program funding has been introduced and the number of sports organizations applying for projects under the programs in order to effectively absorb financial resources;

4. The number of children and young people practicing modern pentathlon in their free time has increased;

5. The material and technical base has been improved, sports equipment and aids have been provided.

Evidence regarding the challenges athletes from the individual pentathlon disciplines are facing emerged from the survey. Mean scores for functional and personal challenges and obstacles as perceived by athlets of each discipline are presented in Table 3.

Overall, the results for the functional challenges/obstacles among the five sports are:

- Shooting – Financial burden, Lack of equipment and Limited access to training facilities;

- Fencing – Transportation, Financial burden and Lack of equipment;
- Swimming – Transportation and Organizational structures in sport;
- Equestrian – Financial burden, Lack of equipment and Organizational structures in sport;
- Running – Lack of time / energy, Limited access to training facilities, Financial burden and Lack of equipment.

Additionally, the results for the personal challenges/obstacles among the five sports are:

- Shooting – Pressure from coach and Emotional stability;
- Fencing – Peer pressure, Parental pressure and Family life demands;
- Swimming – – Stress, Injuries and Lack of motivation / commitment;
- Equestrian – Peer pressure;
- Running – Media / social media, Peer pressure, Pressure from coach and Family life demands.

Table 3. Mean scores for functional and personal challenges and obstacles by individual discipline

	SWIMMING	*RUNNING*	*FENCING*	*SHOOTING*	*EQUESTRIAN*
Functional	3,31	3,51	4,00	3,11	3,46
Lack of time / energy	3,12	3,46	3,67	3,00	3,75
Limited access to training facilities	3,37	3,46	3,67	2,67	3,50
Transportation	3,12	3,54	4,00	2,67	3,25
Financial burden	3,62	3,54	4,33	3,33	3,50
Lack of equipment	3,37	3,61	4,33	3,33	3,50
Organizational structures in sport	3,25	3,46	4,00	3,66	3,25
Personal	3,55	3,43	3,59	3,22	3,25
Stress	3,37	3,46	4,00	3,33	3,25
Injuries	3,50	3,15	4,00	3,00	2,75
Lack of motivation / commitment	3,50	3,15	4,00	3,33	2,75
Emotional stability	3,75	3,38	3,67	3,33	3,25
Media / social media	3,37	3,38	3,67	3,33	3,50
Peer pressure	3,50	3,61	3,33	3,67	3,50
Parental pressure	3,62	3,61	3,33	3,00	3,25
Pressure from coach	3,87	3,54	3,00	2,67	3,50
Family life demands	3,50	3,61	3,33	3,33	3,50

4.B PROSPECTS FOR A PENTATHLON CAREER

According to the conducted interviews among athletes and coaches, there are currently limited opportunities for career and development of modern pentathlon in Bulgaria. Most athletes in disciplines such as swimming, running, fencing, equestrian sports and shooting do not currently find a good, sporting or financial reason to practice modern pentathlon. Only

five of the athletes considered becoming involved in the Modern Pentathlon as athlete. A significant part of the coaches show readiness and desire to become coaches in modern pentathlon – 22 coaches are interested to eventually become involved with Pentathlon as a trainer in their sport. A lot of them (18) see in a prospect for a career in Pentathlon as a secondary occupation, but most of the participants (22) are willing to get appropriate education/training to purse a Pentathlon-related job.

Overall, the results from the survey showed that:

73% of the participants are heard about the Modern Pentathlon;

79% of the participants are never looked for information regarding the Modern Pentathlon;

53% of the participants know what sports comprise the Modern Pentathlon;

Only 13% of the participants considered becoming involved in the Modern Pentathlon as athlete;

58% of the participants show interes to eventually become involved with Pentathlon as a trainer in your sport;

54% of the participants cogitate to combine in the future their career with a career in Pentathlon;

Only 18% of the participants know about a modern pentathlon club near them.

47% of the participants see in a prospect for a career in Pentathlon as a secondary occupation.

The results in details per individual pentathlon discipline are presented in Table 4.

Table 4. Prospects for a dual career in modern pentathlon.

	SWIMMING		RUNNING		FENCING		SHOOTING		EQUESTRIAN		TOTAL
	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	%YES
1. Have you ever heard about the Modern Pentathlon	4	4	12	1	3	0	3	0	3	1	74%
2. Have you ever looked for information regarding the Modern Pentathlon	0	8	1	12	1	2	0	3	1	3	1%
3. Do you know what sports comprise the Modern Pentathlon	2	6	1	12	1	2	0	3	0	4	41%
4. Have you ever considered becoming involved in the Modern Pentathlon as athlete	0	8	1	12	0	3	0	3	0	4	1%
5. Would you be interested to eventually become involved with Pentathlon as a trainer in your sport	7	1	6	7	3	0	3	0	4	0	1%
recreational / competitive / both	5	2	3		3	1	2	3	0	1	3
6. Would you consider as a dual career opportunity as a Modern Pentathlon trainer	5	3	6	7	2	1	3	0	2	2	1%
recreational / competitive / both	4	2	2		3	1	1	0	3	0	2
7. How feasible you think it is to combine in the future your career with a career in Pentathlon	4	4	7	6	2	1	2	1	0	4	1%
8. Do you know if there is a pentathlon club in your area	0	8	1	12	0	3	0	3	0	4	1%
9. Do you know anyone doing pentathlon recreationally	1	7	1	12	0	3	0	3	0	4	32%
10. Do you know anyone doing pentathlon competitively	0	8	1	12	1	2	0	3	0	4	32%
11. Could you see in a prospect for a career in Pentathlon (as a secondary occupation)	6	2	4	9	2	1	3	0	4	0	1%
12. Are you willing to get appropriate education/training to purse a Pentathlon-related job (as a secondary occupation)?	7	1	8	5	3	0	3	0	4	0	1%

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RESEARCH REPORT - CROACIA

1. PENTATHLON IN CROACIA – STATE OF THE ART

Modern pentathlon is composed of five disciplines as athletes test their rounded skillset in fencing, swimming, riding, shooting and running. The latter two are combined in the final event of the competition.

The Croatian Modern Pentathlon Federation (HSMP) was formally established in 2007, but no relevant activities were put in place, being followed by a long hyatus on inactivity incurred: from 2011 until 2019 no assemblies were held, and the Federation was only officially active, though with invalid and expired decisional organs. In 2019 Ivan Ledić initiated a new assembly and became president, following a request from a Croatian citizen pentathlon athlete based in Berlin, Germany, who qualified for Olympic Games 2020, to be held in Tokyo, and seeked for a formal sport organisation to send application forms and other formalities: the Croatian Modern Pentathlon Federation.

Zagreb Federation for Modern Pentathlon (ZSMP) was stablished as well in 2007. Alike for Croatian Federation, this sport organisation as well didn't displace any relevant activity, being held the elections the lattest in 2014, where the mandates of President and Secretary expired in 2018. Since then, not even formal activities have been accomplished.

The fundamental legislation principles related to sport and physical activity in Croatia are a compendium of two fundamental laws: Law of Sport and Law of No-Profit Organizations.
The need for a modern pentathlon based in Zagreb was due to the particular Croatian laws system in matter of sport: they don't allow a sport club to actively promote and take part in competitions in more than one sport, which must be recognised in an official list published by Croatian Olympic Committee. Hence, for instance an equestrian club that wants to be active in modern pentathlon must create a dedicated satellite club, which must be registrated in a dedicated national federation. While at local level (in this case in Zagreb, the capital city), the free access to public sport venues and funds may bed one only through a local dedicated sport federation: these conditions can be achieved only after obtaining some sport results or holding some sport events, upon a particular list of indicators to be fullfilled. These conditions, not well known in the beginning of this venture, discouraged the 3 clubs (satellites of main equestrain ones) to undergo further activities, leading to the disbandoning of all these Federations and the satellite clubs themselves.

Modern Pentathlon is almost not present in Croatia, except for that Croatian-born girl, who lives in Berlin, Germany, who should take part in now-postponed-to-2021 Olympic Games in Japan. In order to ensure sustainability to modern pentathlon, a 2-years action is required at national and especially at level of the City of Zagreb, which ensures a minimum of lanes in the swimming pools, or access to athletics tracks, or possibly access to indoor sport facilities and some funds for the basic functioning of a sport if there is a:

- Zagreb Modern Pentathlon Federation, which requires to be composed by at least 3 clubs based in Zagreb, all of them active in competitive modern pentathlon;

- Croatian Modern Pentathlon Federation, recognised and fully member of Olympic Committee, which is supposed every year to hold a Croatian championship or similar competitions, with at least 5 domestic clubs competing;

- particular official requirements are to be fixed before applying for any fund, grant, call for tender at national level (eg. statutes of clubs and federation).

2. IDENTIFICATION OF THE EXTANT SKILLS AND NEEDS OF ATHLETED IN INDIVIDUAL PENTATHLON DISCIPLINES

Several skills and competencies were identified through the interviews as being important for pentathlon athletes. This included knowledge of each sport-experience, stamina, concentration, power, speed, technique of each sport, discipline, mobility, reaction speed, and importantly loyalty. More elaborated results regarding the skills and competencies required in pentathlon, and accordingly the needs of athletes from the individual pentathlon disciplines, emerged through the survey with athletes of the individual pentathlon disciplines.

Mean scores regarding the importance of physical and mental skills of the sport, the extant skills of athletes, and the training needs of athletes for each modern pentathlon discipline are presented in Table 1. The Table includes mean scores for the physical and mental skills factors (i.e., physical attributes and mental attributes) and the individual items (i.e., all descriptors below each factor), for each of the two rating scales (i.e. importance and possession), but also their product (i.e., need - after reversing scores for possession), as indicative of the prioritization of athletes' needs.

The extant skills of athletes for the physical attributes among the five sports were:

- Shooting – Muscular Endurance, Cardiovascular endurance and Flexibility
- Fencing – Spatial awareness and Speed
- Swimming – Coordination, Power / Acceleration and Peripheral vision
- Equestrian – Power / Acceleration, Peripheral vision, Spatial awareness
- Running – Speed and Power / Acceleration

Additionally, the extant skills of athletes for the mental skills among the five sports were:

- Shooting – Arousal regulation, Accuracy, Anxiety control, Confidence, Emotion regulation and Mental toughness

- Fencing – Concentration and Emotion regulation
- Swimming – Emotion regulation, Anticipation and Mental toughness
- Equestrian – Confidence and Mental toughness
- Running –Concentration

Overall, the need priorities for the physical skills among the five sports are:

- Shooting – Coordination, Muscular Endurance and Speed
- Fencing – Power / Acceleration and Flexibility
- Swimming – Muscular Endurance, Cardiovascular Endurance and Flexibility
- Equestrian –Muscular Endurance, Cardiovascular endurance and Speed
- Running – Cardiovascular Endurance and Peripheral vision

Additionally, the need priorities for the mental skills among the five sports are:

- Shooting – Concentration, Relaxation and Anticipation
- Fencing – Arousal regulation, Accuracy and Confidence
- Swimming – Accuracy, Anxiety control and Confidence
- Equestrian –Relaxation, Arousal regulation and Concentration
- Running – Relaxation, Arousal regulation and Mental toughness

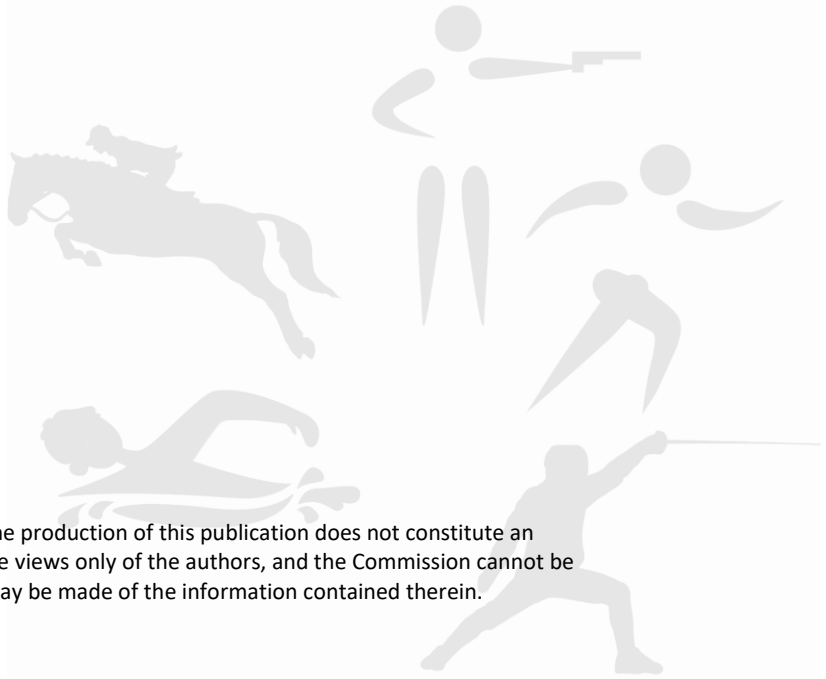

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Table 1. Mean scores for extant skills of athletes and identification of needs (Imp: Importance, Pss: Possession, Nd: Need)

	SWIMMING			*RUNNING*			*FENCING*			*SHOOTING*			*EQUESTRIAN*		
	Imp	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**
Physical attributes	**2,815**	**3,07**	**8,28**	**4,15**	**3,85**	**8,91**	**4,016**	**3,87**	**8,60**	**4,074**	**3,98**	**7,85**	**3,68**	**3,49**	**9,14**
Muscular endurance	3,50	2,67	11,50	3,67	3,83	8,00	4,43	4,00	9,00	4,50	4,00	8,83	4,11	3,33	11,60
Cardiovascular endurance	3,83	2,67	12,70	4,00	3,67	9,33	4,86	3,57	11,90	4,83	4,00	9,50	4,33	3,22	12,00
Speed	2,83	2,67	9,50	4,50	4,17	8,17	4,29	3,57	10,30	3,67	3,50	8,33	4,00	3,44	10,60
Flexibility	3,00	3,17	8,50	4,83	3,83	10,50	3,86	3,43	10,00	4,00	4,00	7,83	3,78	3,67	8,25
Strength	2,33	3,67	5,33	3,33	3,67	8,00	3,86	4,00	7,57	3,83	3,67	9,00	2,67	3,00	7,50
Coordination	2,50	3,67	5,83	4,50	3,50	11,20	4,43	4,29	7,57	5,00	4,00	8,33	3,78	3,56	9,63
Power / Acceleration	2,33	3,33	6,17	4,50	3,50	11,20	4,57	3,86	9,86	3,00	3,50	6,83	4,00	3,44	9,25
Peripheral vision	2,33	2,50	8,00	4,00	4,17	7,17	2,86	4,29	5,00	3,67	4,33	6,17	2,89	3,67	7,25
Spatial awareness	2,67	3,33	7,00	4,00	4,33	6,67	3,00	3,86	6,29	4,17	4,50	5,83	3,56	4,11	6,13
Mental attributes	**4,037**	**3,57**	**9,91**	**4,13**	**3,76**	**9,19**	**4,08**	**4,16**	**7,19**	**4,00**	**3,89**	**8,17**	**3,35**	**3,52**	**7,90**
Concentration	3,67	4,00	7,33	4,33	4,33	7,17	4,43	4,43	6,71	4,50	4,33	7,00	3,67	3,67	7,88
Relaxation	3,83	3,00	11,70	4,33	3,50	11,20	3,86	4,00	7,43	3,67	3,50	9,00	3,33	3,56	8,75
Arousal regulation	3,83	3,33	10,20	4,00	3,50	10,20	3,86	3,71	8,86	4,00	4,33	6,17	2,56	3,11	6,50
Accuracy	4,33	3,67	10,00	4,50	4,33	7,50	3,57	3,86	7,29	4,00	3,67	9,00	2,89	3,67	6,50
Anxiety control	4,67	2,67	15,70	4,00	3,17	11,70	4,14	4,14	7,29	3,83	4,17	6,67	3,33	3,44	7,75
Confidence	4,17	3,83	9,00	3,67	4,33	6,00	4,71	4,43	7,29	3,83	3,33	10,20	4,22	3,44	10,90
Emotion regulation	4,33	3,67	10,20	3,67	2,67	12,20	4,00	4,29	6,43	3,83	4,00	7,50	3,33	3,67	7,50
Anticipation	3,5	4,00	7,00	4,67	4,33	7,67	3,86	4,00	7,43	4,33	3,50	10,70	3,11	3,44	7,63
Mental toughness	4,00	4,00	8,17	4,00	3,67	9,17	4,29	4,57	6,00	4,00	4,17	7,33	3,67	3,67	7,75

3. IDENTIFICATION OF LEARNING NEEDS FOR DEVELOPING PENTATHLON COACHES/TRAINERS

The main skills and competencies that were mentioned during the interviews as important for pentathlon coaches are to be a mentor, technical supporter, motivator, leader, psychologist, and maybe most importantly, as a role model for the athlete. Also a good pentathlon coach has to be positive, enthusiastic, trusting, focused, goal-oriented, knowledgeable, observant, respectful, patient and a clear communicator. Many interviewees added that they would rely more on the coach's skills if he/she had previous experience and significant sporting success in the sport he/she coached.

Mean scores regarding importance, extant skills, and needs of athletes for each modern pentathlon discipline are presented in Table 1. The Table includes mean scores for the knowledge, team dynamics and management skills factors and the individual items (i.e., all descriptors below each factor), for each of the two rating scales (i.e. importance and possession), but also their product (i.e., need - after reversing scores for possession), as indicative of the prioritization of athletes' needs.

Overall, the need priorities for the knowledge among the five sports are:

- Shooting – Technical knowledge and Tactical knowledge
- Fencing – Technical knowledge, Tactical knowledge, Mental training and Mentoring
- Swimming – Physical Training and Mental training
- Equestrian – Physical Training and Mental training
- Running – Mentoring, Mental training and Technical knowledge

Additionally, the need priorities for the team dynamics among the five sports are:

- Shooting – Communication and Empathy
- Fencing – Leadership and Team building
- Swimming – Leadership, Team building and Cooperation
- Equestrian – Team building and Cooperation
- Running – Team building and Cooperation

Finally, the need priorities for the management skills among the five sports are:

- Shooting – Goal setting, Decision making and Conflict resolution
- Fencing – Problem solving, Self-regulation and Goal setting
- Swimming – Conflict resolution, Goal setting, Self-regulation and Problem solving
- Equestrian – Conflict resolution, Goal setting, Self-regulation and Problem solving
- Running – Conflict resolution, Goal setting and Self-regulation

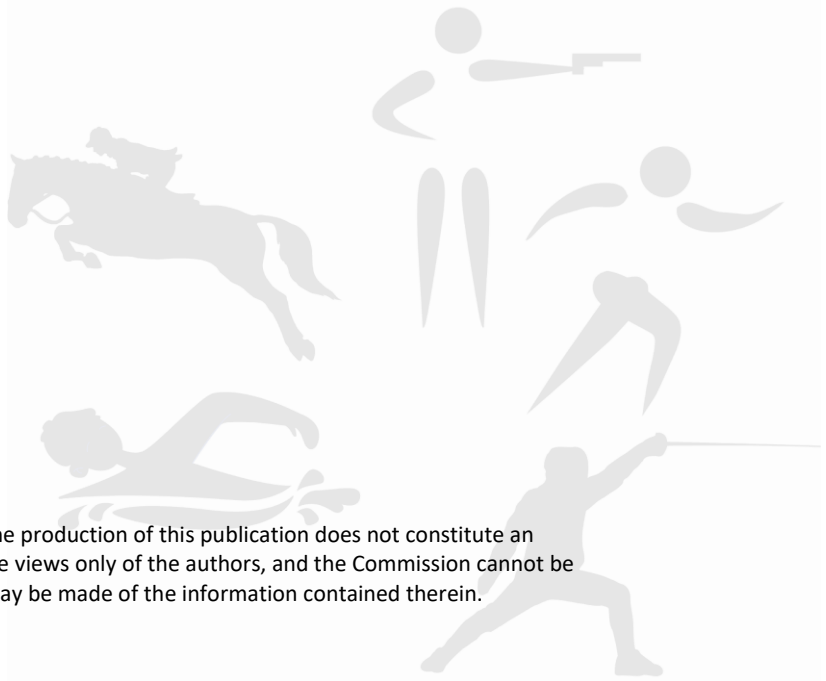

Table 2. Mean scores for learning needs for developing into coach/trainer (Imp: Importance, Pss: Possession, Nd: Need)

	SWIMMING			*RUNNING*			*FENCING*			*SHOOTING*			*EQUESTRIAN*		
	Imp	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**
Knowledge	**3,70**	**2,67**	**12,40**	**4,40**	**3,27**	**12,07**	**4,29**	**4,03**	**8,26**	**4,67**	**3,23**	**12,90**	**4,22**	**3,33**	**11,00**
Technical knowledge	4,50	2,67	15,00	4,50	3,50	11,17	4,57	4,00	8,86	4,83	3,50	12,00	4,56	3,33	12,22
Tactical knowledge	3,33	2,67	11,17	4,67	3,50	11,67	4,00	3,86	8,57	4,17	3,17	11,67	4,00	2,78	12,11
Physical Training	2,83	2,67	9,50	4,17	3,50	10,83	4,57	4,29	7,57	4,50	3,67	10,50	4,33	3,33	11,67
Mental training	3,50	2,83	11,17	4,17	3,17	12,00	4,14	4,00	8,14	4,83	3,33	12,83	4,00	3,56	9,56
Mentoring	4,33	2,50	15,17	4,50	2,67	14,67	4,14	4,00	8,14	5,00	2,50	17,50	4,22	3,67	9,44
Team dynamics	**3,64**	**3,25**	**9,83**	**4,44**	**3,94**	**9,14**	**4,33**	**4,14**	**7,62**	**4,58**	**3,56**	**11,17**	**4,07**	**3,87**	**8,09**
Leadership	3,50	2,67	11,50	4,83	3,67	11,17	4,14	4,14	7,29	4,17	2,83	13,50	4,33	3,67	10,00
Team building	3,33	2,83	10,50	4,50	3,83	9,67	4,14	3,71	9,14	4,17	2,67	14,17	3,56	3,22	9,00
Cooperation	4,33	3,83	9,17	4,33	4,67	5,67	4,29	4,14	7,57	5,00	3,00	15,00	3,67	3,56	8,89
Communication	3,67	3,33	9,83	4,33	4,17	7,83	4,71	4,57	6,43	5,00	4,17	9,17	4,33	4,22	7,89
Empathy	3,33	3,83	7,17	4,33	3,67	10,17	4,29	4,14	7,43	4,67	4,33	7,67	4,33	4,33	7,11
Emotional intelligence	3,67	3,00	10,83	4,33	3,67	10,33	4,43	4,14	7,86	4,50	4,33	7,50	4,22	4,22	7,56
Management skills	**4,67**	**3,11**	**13,50**	**4,56**	**3,97**	**9,17**	**4,43**	**4,26**	**7,33**	**4,67**	**4,06**	**9,06**	**4,04**	**3,65**	**9,29**
Time management	4,83	3,00	14,50	4,50	4,17	8,33	4,43	4,29	7,14	4,67	4,67	6,17	4,00	3,67	8,89
Decision making	5,00	3,17	14,17	4,50	3,67	10,50	4,43	4,43	6,57	5,00	4,17	9,17	4,00	3,78	8,67
Goal setting	4,33	3,33	11,67	4,33	4,17	7,67	4,57	4,57	6,29	4,50	4,00	9,00	4,44	3,67	10,11
Self-regulation	4,67	2,67	15,83	4,50	3,83	9,83	4,29	4,14	7,57	4,67	4,17	8,67	3,89	3,67	8,78
Problem solving	5,00	3,50	12,50	5,00	4,17	9,17	4,43	4,14	8,00	5,00	3,67	11,67	3,78	3,56	8,89
Conflict resolution	4,17	3,00	12,33	4,50	3,83	9,50	4,43	4,00	8,43	4,17	3,67	9,67	4,11	3,56	10,00

4. CHALLENGES AND PROSPECTS IN SPORT / DUAL CAREER

4.A CHALLENGES

Sports and physical activity are a major part of social activities in the field of public relations. Their implementation is a means of education and a healthy lifestyle. The sport is an integrating factor that teaches tolerance and acceptance of the differences between people from the earliest childhood. In the last 30 years, the system of physical education and sports has fallen into a crisis, which is expressed in limiting the reach of children, adolescents, adults and disadvantaged people in the practice of sports and social tourism and the representation of elite athletes in international events. The state of the sports in our country is a natural result of political, economic and social changes in society.

Interviewees expressed concern about:

1. Insufficient financial and human resources

2. Obsolete, depreciated and poorly equipped material and technical base

3. Deficit of highly qualified sports pedagogues

4. Low degree of coherence and interaction between, competent state institutions, local authorities and sports organizations

Coaches and athletes in modern pentathlon also pointed out the following positive results in the last 30 years:

1. The financial resources provided by the state and the municipalities have been increased provide for the implementation of sports development programs

2. The preferences enjoyed by sportsmen have increased organizations in carrying out their activities

3. Program funding has been introduced and the number of sports organizations applying for projects under the programs in order to effectively absorb financial resources

4. The number of children and young people practicing modern pentathlon in their free time has increased

5. The material and technical base has been improved, sports equipment and aids have been provided

Evidence regarding the challenges athletes from the individual pentathlon disciplines are facing emerged from the survey. Mean scores for functional and personal challenges and obstacles as perceived by athlets of each discipline are presented in Table 3.

Overall, the results for the functional challenges/obstacles among the five sports are:

- Shooting – Financial burden, Lack of equipment and Limited access to training facilities

- Fencing – Transportation, Financial burden and Lack of equipment
- Swimming – Transportation and Organizational structures in sport
- Equestrian – Financial burden, Lack of equipment and Organizational structures in sport
- Running – Lack of time / energy, Limited access to training facilities, Financial burden and Lack of equipment

Additionally, the results for the personal challenges/obstacles among the five sports are:

- Shooting – Pressure from coach and Emotional stability
- Fencing – Peer pressure, Parental pressure and Family life demands
- Swimming – – Stress, Injuries and Lack of motivation / commitment
- Equestrian – Peer pressure
- Running – Media / social media, Peer pressure, Pressure from coach and Family life demands

Table 3. Mean scores for functional and personal challenges and obstacles by individual discipline

	SWIMMING	*RUNNING*	*FENCING*	*SHOOTING*	*EQUESTRIAN*
Functional	**2,12**	**3,24**	**3,72**	**3,63**	**2,58**
Lack of time / energy	2,57	3,56	3,83	4,00	3,00
Limited access to training facilities	2,14	3,11	4,00	4,33	2,50
Transportation	1,86	3,33	2,33	1,67	2,00
Financial burden	1,86	3,22	4,00	3,83	3,17
Lack of equipment	2,00	2,89	3,83	3,50	2,33
Organizational structures in sport	2,29	3,33	4,33	4,50	2,50
Personal	**2,06**	**2,39**	**2,75**	**2,38**	**2,05**
Stress	2,43	2,22	3,00	2,33	2,50
Injuries	1,86	2,22	2,67	1,67	2,00
Lack of motivation / commitment	2,00	2,33	3,33	2,67	1,50
Emotional stability	2,57	2,89	2,67	2,33	3,17
Media / social media	2,43	2,1	2,17	1,67	2,00
Peer pressure	1,57	2,00	2,33	1,67	1,67
Parental pressure	2,00	2,00	2,33	2,33	1,67
Pressure from coach	1,86	2,78	2,83	3,83	2,00
Family life demands	1,86	3,00	3,50	3,00	2,00

4.B PROSPECTS FOR A PENTATHLON CAREER

According to the conducted interviews among athletes and coaches, there are currently limited, almost not existing, opportunities for career and development of modern pentathlon in Croatia. Most athletes in disciplines such as swimming, running, fencing, equestrian sports and shooting do not currently find a good, sporting or financial reason to practice modern pentathlon. Most of athletes considered becoming involved in the Modern Pentathlon as athlete, but for recreational purposes, and a very little number of them showed readiness and desire to become coaches in modern pentathlon. On the other side, there is a higher interest for a career in Pentathlon as a secondary occupation, but there isn't readiness to get appropriate education/training to purse a Pentathlon-related job.

More in details, when we asked athletes "Have you ever heard of the Modern Pentathlon", 41% said they had heard and 59% of them said they had never heard of the modern pentathlon. 74% of athletes never looked for any information about modern pentathlon and only 26 percent did, while 61% of athletes know what sports comprise the Modern Pentathlon, but only 26% of them considered becoming involved in the Modern Pentathlon as athletes. 26% of athletes (9 of them) have an interest and would eventually get involved as a coach in their sport – 8 of them at recreational and only 1 at competitive level.

20% of athletes would consider a dual career opportunity as a Modern Pentathlon trainer and 10 athletes (29%) think it is possible to combine their careers with a career at Pentalon trainer in the future. Unfortunately, only 21% of respondent athletes know whether there is a modern pentathlon club near them and 32% know some who practice modern pentathlon recreationally, and only 3 of them know who practice it competitively. To the question "Could you see in a prospect for a career in Pentathlon (as a secondary occupation)", 47% of the athletes answered positively and almost all of them wish to receive an appropriate education (44%).

The results in details per individual pentathlon discipline are presented in Table 4.

Table 4. Prospects for a dual career in modern pentathlon.

	SWIMMING		RUNNING		FENCING		SHOOTING		EQUESTRIAN		TOTAL
	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	%YES
1. Have you ever heard about the Modern Pentathlon	6	1	4	5	2	4	0	6	2	4	41%
2. Have you ever looked for information regarding the Modern Pentathlon	3	4	4	5	1	6	0	6	1	5	26%
3. Do you know what sports comprise the Modern Pentathlon	7	0	8	1	2	4	0	6	4	2	61%
4. Have you ever considered becoming involved in the Modern Pentathlon as athlete	4	3	3	6	1	5	0	6	1	5	26%
5. Would you be interested to eventually become involved with Pentathlon as a trainer in your sport	4	3	3	6	1	5	0	6	1	5	26%
recreational / competitive / both	3/1/0		3/0/0		1/0/0		0/0/0		1/0/0		
6. Would you consider as a dual career opportunity as a Modern Pentathlon trainer	4	3	2	7	0	6	0	6	1	5	20%
recreational / competitive / both	3/1/0		2/0/0		0/0/0		0/0/0		1/0/0		
7. How feasible you think it is to combine in the future your career with a career in Pentathlon	4	3	4	5	1	5	0	6	1	5	29%
8. Do you know if there is a pentathlon club in your area	4	3	3	6	0	6	0	6	0	6	20%
9. Do you know anyone doing pentathlon recreationally	5	2	4	7	1	5	0	6	1	5	32%
10. Do you know anyone doing pentathlon competitively	2	5	1	8	0	6	0	6	0	6	1%
11. Could you see in a prospect for a career in Pentathlon (as a secondary occupation)	4	3	7	2	1	5	0	6	4	2	47%
12. Are you willing to get appropriate education/training to purse a Pentathlon-related job (as a secondary occupation)?	4	3	7	2	1	5	0	6	3	3	44%

REFERENCES

Websites of the:
- Croatian Olympic Committee, www.hoo.hr
  - section about Modern Pentathlon https://hoo.hr/hr/hrvatski-olimpijski-odbor/nacionalni-sportski-savezi/120-savezi-olimpijskih-sportova/hrvatski-savez-za-moderni-pentatlon

- City of Zagreb – Federation of Sports, http://www.zgsport.hr/

BEST PRACTICES

BEST PRACTICE 1

Name of the Project/Organization	**EHPARP: Enhancing Health and Physical Activity Rates through Pentathlon**
Type of organization	**Finswimming Team Komet**
Country	Croatia
Description of the practice (project or organisation)	FT Komet reactivating both the Zagreb and Croatian Federations of Modern Pentathlon, attempting to promote the sport and encourage new athletes to be involved in this sport adopted the following strategies: (a) involving former athletes in recreational activities; (b) providing conditions for trainings due to club reputation and position with Zagreb sport system; (c) FT Komet borrowed from Police, in Osijek, the laser pistols to the clubs in order to avoid to buy them (minimum *purchase amount* is 1.000 euros).
Relevance to the EHPARP project	The collaboration between FT Komet, 3 pentathlon clubs and the 2 federations aims to remove financial burden from potential athletes, thus facilitating the promotion of Pentathlon, and provide a tutorship for the management of these new born sport organizations.
Impact of the practice	- This practice can promote and motivate the involvement of new athletes in Modern Pentathlon and increase the number of members athletes of the Federation. Additionally, athletes' training and participation in sport events can enhance their health.
References, sources	www.finswimmingteam-komet.hr

BEST PRACTICE 2

Name of the Project/Organization	**EHPARP: Enhancing Health and Physical Activity Rates through Pentathlon**
Type of organization	**Finswimming Team Komet**
Country	Croatia
Description of the practice (project or organisation)	FT Komet co-established a Club for Modern Pentathlon, KMP Alba, and activated the training process
Relevance to the EHPARP project	Due to Croatian laws in matter of Sport, a club only for modern pentathlon had to be established. This new club may new officially and legally gather members, organize sport trainings and use public and private facilities and venues, also applying to public tenders for using them.
Impact of the practice	- This practice allows club members to train, to organize first championships and to create a mix of visibility, dissemination and communication tools related mainly to the project.
References, sources	Facebook page of CMP Alba: https://www.facebook.com/Klub-modernog-pentatlona-Alba-110920880519574

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RESEARCH REPORT – ITALY

1. PENTATHLON IN ITALY – STATE OF THE ART

The high-level movement in Italy

Italy has achieved impressive results in the field of youth pentathlon, in fact the country ranks at the top of the International Modern Pentathlon for both sport results and organizational technical skills.

One of the most important achievements recently was Elena Micheli winning the silver medal in 2019.

The current goal for the Italian team is to be able to participate in the Olympic Games in Tokyo scheduled for 2020 (postponed to 2021 due to COVID19). Italy is expected to be represented by 2 male and 2 female athletes (that is the maximum number allowed). Since it is an individual sport discipline, there will be no teams.

The Italian Modern Pentathlon Federation considers the likelihood of obtaining qualification for the maximum number of athletes expected, in fact in the women's field there is already a qualified athlete (out of the two) and in the men's field there is an athlete in second place in the Olympic Ranking.

The different stages to qualify for the Olympics depends on the results obtained at the World Championships that allows direct qualification, and the scores obtained in four world cups such as the World Cup, World Cup Final, PERIDOT Hungarian Indoor Competition and USA Open.

The Italian Olympics Team will most likely be composed of the following athletes:

DONNE

Cognome Nome	Data Nascita
Prampolini, Irene	18/09/1996
Tognetti, Francesca	20/08/1995
Tognetti, Aurora	16/09/1998
Micheli, Elena	29/04/1999
Sotero, Alice	28/05/1991
Frezza, Alessandra	08/07/1995

UOMINI

Cognome Nome	Data Nascita
Malan, Giorgio	27/01/2000
Parisi, Giuseppe Mattia	29/09/1994
Cicinelli, Matteo	12/03/1998
De Luca, Riccardo	22/03/1986
Colasanti, Daniele	21/07/1996
Colasanti, Alessandro	09/01/1995
Micozzi, Gianluca	13/08/1996
Petroni, Pier Paolo	30/03/1987
Grasselli, Valerio	25/05/1993

The preparation for the Olympics is taking place in different locations, in various Italian cities and abroad as well: in Pesaro, in Sestriere and in Martinafranca, furthermore in the Canary Islands (Spain), in Mungyeong (South Korea), in Tokyo (Japan), in Tata (Hungary).

Originally, there were three training sessions planned for 2020 in Italy and six sessions abroad, but the programme has been disrupted by the COVID19 emergency, and the Olympic team has been training in Italy since July, 2020.

The Federation also has junior athletes of international interest who are currently training together.

The list of athletes is as follows (name and age indicated below):

DONNE

Cognome Nome	Età
Agazzotti, Giorgia	17
Bagaglini, Giulia	16
Baldassarre, Maria Celeste	16
Giannotti, Margherita	13
Lopez, Maria Lea	19
Mercuri, Maria Beatrice	19
Micheli, Elena	20
Petricca, Agnese	18
Rinaudo, Alice	19

UOMINI

Cognome Nome	Età
Agazzotti, Riccardo	21
Frezza, Stefano	19
Malan, Giorgio	19
Micheli, Roberto	22
Sala, Matteo	19
Serrecchia, Alessandro	15
Testarmata, Riccardo	19

A series of training sessions were organized for these athletes in Cecchignola (Italy) and also in Egypt and Plymouth (Great Britain).

This year, there have been three national training sessions in Italy and two youth trainings abroad that had to be suspended due to the COVID19 emergency.

The Italian Modern Pentathlon also follows sport disciplines that are not currently part of the Olympic program:

- Relay race (both for men and women)
- Mixed relay race

The Federation employs a medical team for those athletes who are likely to attend the Olympics: two doctors and a technical staff consisting of fourteen technicians for the “absolute category” and two technicians for the youth.

The federal technicians are trained and receive continuous training in the form of various theoretical courses organized by the SIT while CONI provides training courses focusing on the more general aspects that affect the practice of sports.

Background

Pentathlon was born as a race as early as 708 BC. The sport most likely was invented by the ancient Spartans who used it to train their warriors. The disciplines were running, long jumping, discus throwing, javelin throwing and sprinting. For many years, its spectacularity and completeness made it the main attraction of the Olympics. De Coubertin managed to take the Pentathlon to the Modern Olympics in Stockholm in 1912. The disciplines were in order: - horse riding (full path); - fencing (Italian-style tournament with a single hit), - pistol shooting (20 rounds); swimming (300 meters freestyle) and running (4000mt, cross-country). The whole competition lasted for five days, one reserved for sport. There were no score tables for each individual discipline, the final ranking was based on: place achieved in each discipline was equivalent to the score 1st, 2nd, two points, and so on; the winner was obviously the athlete who at the end of the five rounds had scored the least points. The first score tables (Swedish style) were first used in 1954 at the World Championship in Budapest. The horse-riding went through some changes, from complete riding to obstacle riding. First, there were 15 obstacles, then this number was decreased to 12. Until 2000, only male athletes were allowed to compete, the women's debut took place at the Olympics Games hold in Sydney. The rules did not change until 1988 (Seul). However, in Barcelona in 1992, shooting and swimming were incorporated into a single day reducing the days of the game to four. The biggest changes in pentathlon were made after the Olympics in Barcelona: between 1993 and 1994, the duration of the game was reduced to "One Day Competition" and the shooting was carried out with compressed air. Another change was made by the U.I.P.M after the 1996 Olympic Games held in Atlanta. The change has affected the two athletics disciplines, swimming and running: in swimming the distance was reduced from 300 meters to 200 meters and in sprinting from 4000 meters to 3000 meters.

There was obviously an adjustment of the scores, varying the value of each second; both disciplines, as a result of these variations, have lost importance.

What is the value of each individual discipline of the pentathlon?

Athlete Valentini Andrea made a study on some of the most important competitions (men's sector) and he was able to assign each discipline with a percentage value about the importance it holds in pentathlon. The following indicative data are obtained about the influence of each individual discipline:

Shooting	Fencing	Swimming	Horse-riding	Running
15%	31%	15%	21%	18%

However, it should be noted that the continuous rise of the general level constantly changes the influence of the various disciplines. Fencing is the only one in which large gaps are still present. Between the winner of the race and the 'mid-table' /midfield, there always have been and always will be, as long as these scores remain this way, about two hundred point difference. Confirming this theory, at the Olympics Games in Beijing, the winner scored 1024 points while the athlete at the 18. place achieved 888 points. In the women's game it is different. We have to note that over the years (the women's Pentathlon was launched in the late seventies) there have been various changes. The technical tests went through the same process as in the men's race. In the athletic disciplines, on the other hand, there was an inverse trend compared to the men's field. The distance in swimming was left unchanged, it has always been 200 meters. However, the distance in running was increased from two kilometers to three in 1990. This change has increased the influence of this discipline by about thirty percent. Here even more so than in the men's race, the general level has grown dramatically in recent years. All the disciplines now have flat rankings and few extraordinary scores emerge. The study of the rankings, carried out with the same criterion used for men, shows the following data about the influence of the various disciplines on the outcome of the final ranking:

Shooting	Fencing	Swimming	Horse-riding	Running
20%	26%	14%	17%	23%

Fencing has the biggest percentage in achieving good result in pentathlon. Just like in the first study, there are about 200 points difference between the winner and the midfield. In running, despite having reached excellent levels, the winner of the game can still earn on average 190 points (almost twice as many as the men). In the shooting, the difference is about 160 points. In swimming, the athletes have smaller gaps when it comes to the points: it is about 110.

Horse riding has the least influence with its 17% contribution to the total score. In the coming years, it is possible that the significance of athletic disciplines (swimming, running) and shooting will continue to rise, resulting in further enhancement of fencing. However, the latter has recently undergone a very small downsizing. Reaching a 1000 points becomes, because of

rounding, more difficult; while the middle of the ranking stays where it was. This change has therefore improved the balance between the various disciplines. The influence of the various disciplines has now become the following:

Shooting	Fencing	Swimming	Horse-riding	Running
16%	27%	16%	22%	19%

Here, the fencing did not lose its significance.

2. IDENTIFICATION OF THE EXTANT SKILLS AND NEEDS OF ATHLETED IN INDIVIDUAL PENTATHLON DISCIPLINES

The modern pentathlon combines five different disciplines into a single competition: fencing, swimming, horse riding, running and shooting.

The activity is intense and requires lots of physical preparation, linked with literally all muscle groups of the human body. A great pentathlon athlete needs to have not only strength and endurance, but excellent coordination skills for shooting, the ability to manage stress and pressure, and elegance and agility for horse-riding.
Pentathlon improves concentration and contributes to well-being in general. It is a perfect sport for those who love challenge, adrenaline sports and strategy, as well for those who would like to overcome physical and mental limitations.
The pentathlon is a multidisciplinary sport coming from the multilaterality concept of E.Hahn (1986):

"*The foundation of every training, in performance sport, is a general basic training, which goes beyond the various disciplines and is set on a large scale, in which the multiplicity of motor models is a great value.*
The wider the repertoire of motor experiences in different sports is, the easier it is to achieve higher levels of performance."

The modern pentathlon is composed of five disciplines that for their diversity require the athlete a variable of cardiovascular commitments. The disciplines are characterized by athletic components such as running and swimming, and by "dexterity" such as fencing, shooting and horse riding.

A pentathlon athlete needs to be in possession of a variety of different skills: speed, strength, techniques.

A pentathlete must have other skills, too, such as aerobic power and technical, coordination and concentration skills useful to improve performance in disciplines such as fencing, shooting and horse riding. To fully understand how pentathlon works, we must take a closer look to the individual disciplines, to evaluate and analyze the metabolic and biomechanical factors.

In addition to a great versatility of physical and technical aptitude, Modern Pentathlon necessarily requires a considerable amount of intelligence, a strong mental elasticity, great attention and concentration.

In view of the completely different characteristics presented by the five disciplines that make up the pentathlon, pentathlete must have great *physical, technical and psychological versatility.* They need to be flexible in a sense that they have to adapt to different situations and make decision quickly best fit to the particular discipline of pentathlon.

Horse riding

Horse riding in the pentathlon involves a total of 15 jumps on a track of 350-450 meters, in which 12 obstacles are placed. The athlete and the horse are paired together before the competition and the athlete has only 20 minutes to get to know the horse and make five warm-up jumps before the actual race.

Horse riding, according to the classification proposed by Dal Monte, is part of the dexterity activities with postural and directional muscle commitment. In horse riding, psychosensory efficiency is an essential quality, because it allows, thanks to the relationship that is established with the animal, to give commands and establish directions and trajectories. In particular, it emphasizes the importance of the technique (through the use of the reins or the pressures exerted by feet and knees) of the athlete's ability to react and adapt to an animal (which by regulation is different in each race) to achieve optimal performance. The cardiocirculatory commitment in this discipline is purely neurogenic. The prevailing muscle commitment is an isometric type involving numerous muscle groups (neck, spine and lower limbs) for postural maintenance that requires intense and prolonged muscle contractions of isometric type, and concentric and eccentric type separated by short intervals of time to counteract the multidirectional stresses received by the bike of the horse.

The anaerobic alactacid and lactacid metabolism, used to ensure muscle strength, therefore represents the limiting factor of the athlete while the role of aerobic metabolism is minimal.

In horse riding, both the ability to detect the technical and behavioural characteristics of the horse and the ability to quickly establish an optimal relationship with the latter are put to the test. In addition, since it is not possible to try the horse before the competition, the athlete walks it studying its characteristics and imagining the strategies to adopt. The athlete is able to understand the horse (and make himself understood) in the 20 minutes that he/she is given. Each reaction of the horse to the various gaits, to the jump and to the type of command given, is recorded and evaluated in detail: the attention to proprioceptive, visual, tactile, kinestical sensations reaches the highest level. Once in the field-race, the athlete mentally reviews the field, elaborating the actions he previously decided to perform to overcome the various

obstacles. At the sound of the bell, he has a minute to start his test and, after the mental journey, focuses on obstacles considered particularly difficult. In addition, the passing of an obstacle gives them a focus on the past event and prevents conscious control over the action to come. The often unpredictable reactions of the horse oblige an immediate choice of alternative solutions and a carelessness to the present situation is, in this discipline, particularly harmful and penalizes seriously the athlete.

Fencing

In modern pentathlon, each athlete takes turns against all opponents in one-minute assaults. Sword is used, the athlete who scores a stockpil wins the duel.

Fencing is seen as a dexterity activity with considerable muscle commitment, due to the high district muscle strength applied and the high percentage of muscle masses involved. A fencer, specifically, must be equipped with fast force, reactive-elastic force and energy reuse capabilities. Analyzing the muscle characteristics of the fencers, we compare their analogy with those athletes who practice team sports such as football and basketball, or athletes engaged in power disciplines, distinguished by explosive and reactive strength and muscle elasticity. Fencing, however, requires technique, precision, speed and quick decision. These qualities can be improved over time, with training. From a metabolic point of view, it is observed that in fencing there are sub-aerobic phases, rare aerobic phases, anaerobic phases (lactocide, alattacide) and rest: these phases allow to compare fencing to an alternating aerobic-anaerobic discipline. At the bioenergy level, however, the parameters found allow to compare it to activities characterized by anaerobic power and maximum aerobic power. Anaerobic metabolism must be effective in ensuring the athlete a rapid restoration of ATP levels, thus avoiding the effects of muscle fatigue. At the cardiocirculatory level, fencing is characterized by a medium to high commitment with varying pace of heart rate, peripheral resistance and heart range.

In the fencing tournament, athletes fight against their own teammates in the first round. At this stage of the tournament the mental attitude is, of course, very different from the later stages. The athletes know each others' strengths and limitations, so the meeting is particularly challenging. They can recall plenty of information of course, but the uncertainty of the actions proposed to the opponent is particularly low: you just have to pull according to a logic of metal or break your usual rules adapting them to this particular situation. The assault is fought, then, at a single stockpier, unlike those fencings that involve the victory at the best of 5 stockpis. In pentathlon, the 5-stockperrule does not apply and no chance of recovery is given, and a split second of lack of attention can cause a defeat even against a weaker opponent. The competition is also organized as a unique group and the athlete is therefore engaged for a very long time (even 12 hours). The difficulty of predicting waiting times makes it difficult for those athletes who do not know how to make the best use of relaxation methods, to turn off and quickly regain the concentrated attention needed during the assault.

Swimming

Swimming in pentathlon is characterized by a race distance of 200 m. According to the physiological classification of sports, the 200 m freestyle is identified as an aerobic-anaerobic activity (with a duration of between 40 seconds and 4 -5 minutes) characterized by high aerobic power associated with a remarkable anaerobic component.

From a cardiovascular point of view, it is a high cardiovascular activity while from a biomechanical point of view, in the 200 m freestyle we see a high percentage of committed body muscle masses and a high district muscle strength required.

In swimming, it is very important to have a precise awareness of the athletes' pace and passing times. A high capacity in time estimation is an advantageous internal reference and is the premise for distributing effort/training optimally according to the table of steps that studied and established as priorities. It takes little to break the delicate balance between contraction and alternating relaxation of the limbs involved in the swim and lose smoothness. Some athletes with developed muscles, not suitable for the swimming discipline, see their race times significantly worsen precisely because of the excessive commitment that results in an increase in muscle tone and a contraction of the masses not useful to aquatic sports.

Athletics, shooting

In pentathlon, the athletics test is "combined" with the shooting, alternating the component of the shoiting (5 targets to be hit with laser pistol in the one minute time limit) to 800 meters of crosscountry running, repeating that sequence 4 times. This arrangement represents an evolution from the previous regulation which provided for a total running distance of 3000 meters.

The "combined" event between shooting and running therefore requires, in addition to the essential "psychological and technical characteristics of the two disciplines", the support of a strategy that allows athletes to get to the shooting test in the best possible condition after a cross-country race.

At the cardiocirculatory level, running is noted as high-commitment activity, with regular submaximum and/or maximum increase in heart rate, heart range and peripheral resistances. The muscle masses and district muscle forces used are high in both race modes and therefore, in relation to the regulation changes, no changes to the biomechanical model are observed. Shooting, on the other hand, is a discipline of dexterity, characterized by a poor muscle commitment with low percentages of muscle masses involved. The technical gesture is complex as the factors closely related to alternating running and shooting activities, the emotional and psychological components related to physiological tremors after the race, the time limit to make the shots, the control over the race situation and its evolutions. For these reasons too, shooting is classified as predominantly neurogenic activity with significant changes in heart rate.

Interview with an instructor

"In my opinion. the pentathlete does not necessarily have to excel in a specific field, in a single discipline since the performance model of modern pentathlon does not require a certain

specificity. The mental aspects make all the difference. The recognition of emotions and their management is crucial to the performance. I interpret concentration and relaxation in a dynamic context, it is the ability to consciously alternate the moments of activation and the moments of deactivation. It is not possible to keep the concentration high for the entire duration of the competition."

Empirical research

The Research Framework has been developed based on desk-research and empirical research, we used questionnaires to better understand the skills the athletes have or need in modern pentathlon and the challenges they face.

Participants

Participants were 23 athletes (12 males and 11 females), 9 from swimming, 11 from running, 1 from fencing, 1 from shooting, and 1 from equestrian, with a mean age 37.91 years. Their mean sport experience was 17.43 years and they had been participating in competitions for 9.56 years. They were training on average 3.47 days per week / 7.56 hours per week. They were currently competing at national (n= 13) and international (n= 10) level.

Results

For ***section one*** we present (Table 1) for each modern pentathlon discipline the mean scores for the physical and mental skills factors (i.e., physical attributes and mental attributes) and the individual items (i.e., all descriptors below each factor), for each of the two rating scales (i.e. importance and possession), but also their product (i.e., need - after reversing scores for possession), as indicative of the prioritization of athletes' needs.

The extant skills of athletes for the physical attributes among the five sports are: (a) for swimming, athletes scored higher for coordination, cardiovascular and muscular endurance, (b) for running, athletes scored higher for cardiovascular endurance, peripheral vision, and muscular endurance, (c) for fencing, the athlete scored higher for cardiovascular and muscular endurance, (d) for shooting, the athlete scored higher for strength, coordination, peripheral vision, and spatial awareness, and (e) for equestrian, the athlete scored higher for peripheral vision and spatial awareness. Additionally, the extant skills of athletes for the mental skills among the five sports are: (a) for swimming, athletes scored higher for concentration and emotion regulation, (b) for running, athletes scored higher for concentration and mental toughness, (c) for fencing, the athlete scored higher for anxiety control and accuracy, (d) for shooting, the athlete scored higher for accuracy and mental toughness, and (e) for equestrian, the athlete scored higher for accuracy and confidence.

Furthermore, the need priorities for the physical skills among the five sports are: (a) for swimming, athletes scored higher for speed and muscular endurance, (b) for running, athletes scored higher for power/acceleration and flexibility, (c) for fencing, the athlete scored higher for speed and flexibility, (d) for shooting, the athlete scored higher for muscular endurance, coordination, and spatial awareness, and (e) for equestrian, the athlete scored higher for power/acceleration and strength. Additionally, the need priorities for the mental skills among

the five sports are: (a) for swimming, athletes scored higher for anxiety control and confidence, (b) for running, the athlete scored higher for mental toughness and confidence, (c) for fencing, the athletes scored higher for concentration and mental toughness, (d) for shooting, the athlete scored higher for concentration, arousal regulation, accuracy, anxiety control, confidence, and anticipation, (e) for equestrian, the athlete scored higher for concentration and mental toughness.

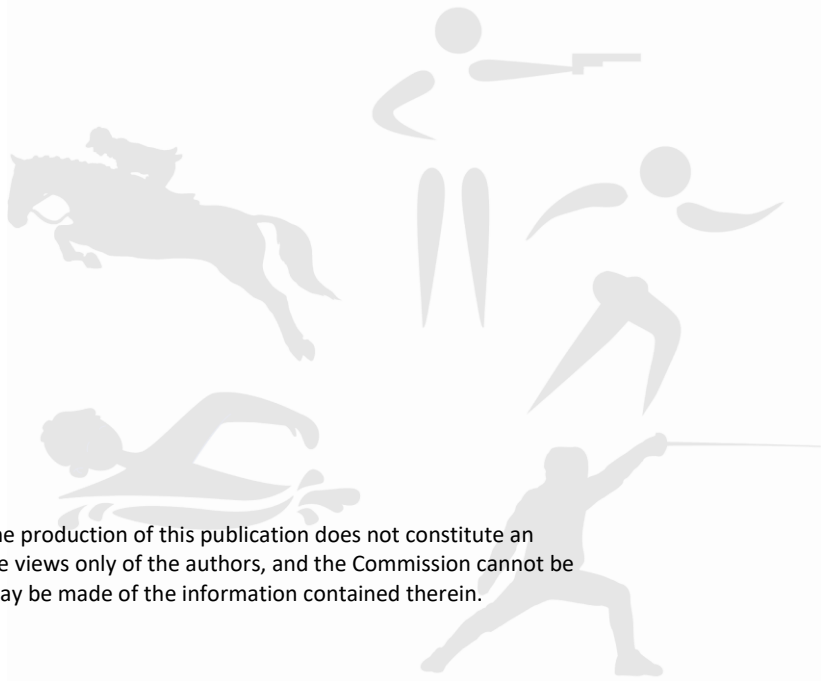

Table 1. Mean scores for extant skills of athletes and identification of needs (Imp: Importance, Pss: Possession, Nd: Need)

	SWIMMING			*RUNNING*			*FENCING*			*SHOOTING*			*EQUESTRIAN*		
	Imp	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**
Physical attributes	**3.62**	**3.55**	**8.09**	**3.25**	**3.12**	**8.62**	**3.00**	**3.11**	**7.33**	**1.44**	**1.44**	**6.44**	**3.77**	**3.77**	**7.00**
Muscular endurance	4.43	3.77	9.44	3.72	3.45	9.09	4.00	4.00	8.00	2.00	1.00	10.00	4.00	4.00	8.00
Cardiovascular endurance	4.44	3.88	9.00	4.45	3.90	8.72	5.00	5.00	5.00	1.00	1.00	5.00	4.00	4.00	8.00
Speed	3.88	3.33	10.00	3.00	2.63	9.00	3.00	3.00	9.00	1.00	1.00	5.00	3.00	4.00	6.00
Flexibility	3.66	3.44	9.00	2.81	2.09	10.45	4.00	2.00	9.00	1.00	1.00	5.00	3.00	1.00	6.00
Strength	3.00	3.22	7.55	3.18	3.09	8.72	2.00	3.00	6.00	1.00	2.00	4.00	3.00	3.00	9.00
Coordination	3.88	4.11	6.55	3.09	3.36	7.09	3.00	3.00	9.00	2.00	2.00	8.00	4.00	4.00	8.00
Power / Acceleration	3.66	3.44	8.77	3.45	2.72	10.81	2.00	3.00	6.00	1.00	1.00	5.00	5.00	4.00	10.00
Peripheral vision	2.44	3.33	5.11	2.54	3.63	5.54	2.00	3.00	6.00	2.00	2.00	8.00	4.00	5.00	4.00
Spatial awareness	3.22	3.44	7.44	3.09	3.27	8.18	2.00	2.00	8.00	2.00	2.00	8.00	4.00	5.00	4.00
Mental attributes	**4.12**	**3.55**	**9.84**	**3.31**	**3.34**	**8.06**	**8.06**	**3.66**	**10.00**	**1.77**	**1.22**	**8.66**	**3.33**	**3.77**	**7.66**
Concentration	4.77	4.00	9.33	4.27	4.09	7.54	4.00	2.00	16.00	2.00	1.00	10.00	5.00	3.00	15.00
Relaxation	4.00	3.44	10.11	2.72	3.54	6.63	4.00	3.00	12.00	1.00	1.00	5.00	3.00	4.00	6.00
Arousal regulation	4.22	3.66	9.77	3.18	3.09	8.09	3.00	3.00	9.00	2.00	1.00	10.00	2.00	4.00	4.00
Accuracy	3.22	3.66	7.22	2.63	3.27	6.54	5.00	4.00	8.00	2.00	2.00	10.00	4.00	5.00	4.00
Anxiety control	4.33	3.44	11.11	3.45	3.36	8.72	4.00	5.00	4.00	2.00	1.00	10.00	3.00	3.00	9.00
Confidence	4.00	3.11	11.11	3.00	2.81	9.00	3.00	3.00	9.00	2.00	1.00	10.00	2.00	5.00	2.00
Emotion regulation	4.55	3.77	9.77	3.56	3.54	8.09	4.00	3.00	12.00	1.00	1.00	5.00	3.00	3.00	9.00
Anticipation	3.36	3.22	9.55	2.72	2.72	8.63	2.00	2.00	8.00	2.00	1.00	10.00	4.00	4.00	8.00
Mental toughness	4.66	3.66	10.66	4.27	3.72	9.36	4.00	3.00	12.00	2.00	2.00	8.00	4.00	3.00	12.00

3. IDENTIFICATION OF LEARNING NEEDS FOR DEVELOPING PENTATHLON COACHES/TRAINERS

In the world of Italian Pentathlon there are several educational figures:

- Instructor
- Coach
- First, second, third level coordinator

Instructor

It is the first step that allows you to acquire the basics of the discipline and it is essential to the introduction/approach to the career of coach. The instructor's activity composes of the teaching of the simplest and most basic aspects that make up the disciplines of Modern Pentathlon. The instructor must prove that he/she knows the F.I.P.M. Technical Regulations, and the related means and methods that are needed for the development of youngsters in order to guarantee the harmonious psychophysical development of young athletes. For this reason, information and general knowledge regarding the biological, physiological and pedagogical principles of human development are paramount importance in the training of instructors, who will need to understand their role and demonstrate their competence.

Learning areas

- Evolutionary age physiology
- Methodology principles
- Teaching methodology
- Organization of youth training
- Swimming technique and teaching
- Technique and teaching of fencing
- Technique and teaching of running
- Technique and teaching of shooting
- Combined Technique and Teaching
- Horse riding technique and teaching

Coach

The coach must demonstrate that he/she has general knowledge regarding biology, exercise and training physiology, and psycho-pedagogical knowledge concerning cognitive development and personality. The coach has monodisciplinary competence, in this way that he/she will be able to direct his/her pupils to specialization. The coach will need to be able to plan and manage activities in the short, medium and long term, proving to have in-depth technical knowledge in the disciplines of fencing, swimming, horse riding, running and shooting.

Learning areas

- Training theory and methodology
- General aspects of physiology and bioenergy
- Psychology of Sport
- Principles of nutrition and integration in sport
- Organizing and managing resources
- Swimming: Principles of theory and methodology of swimming training -operational proposals and reviewing the work in the pool. Training schedule: The annual programming
- Running: Principles of running theory and methodology - operational proposals and reworking of field work. training schedule: The annual programming.
- Shooting: Principles of running theory and methodology - operational proposals and reworking of field work. training schedule: The annual programming.
- Combined: Safety Standards, Shooting Propedeutics, Principles of Running and Shooting Training Theory and Methodology. Periodization, Training Schedule: The annual schedule.
- Fencing: Safety Standards, Fencing Propedeutics, Principles of Training Theory and Methodology, Periodization, Training Programming: Annual Programming.

Horse riding: Safety Standards, Propedeutics to Riding, Principles of Training Theory and Methodology, Periodization, Training Programming: Annual Programming

Coordinator 1st, 2nd and 3rd level

The skills of a coordinator include the ability to plan and coordinate the activity for swimming, running, shooting and combined disciplines of Modern Pentathlon, from the youth categories to the seniors. The general parts of the course aim to deepen knowledge regarding biological, physiological and psychological adaptations of training methods and discipline training planning. The course aims to carry out highly qualified training with the goal of preparing an athlete capable of: a) Coordinating and planning the activity of the disciplines; b) Take on design responsibilities; c) collaborate in a qualified way in research activities.

Learning areas

- Theory and Methodology of Sports Training.
- Methodology of Teaching in Sport. Excellent theoretical and practical models of the teaching of technique and tactics in sport.
- Management of the Athlete and Teams in Sports Organizations.
- Methodology of Research applied to Sport: general principles and techniques of data collection and analysis.
- Human Physiology Applied to Sport.

- Applications of new technologies in the design and management of training
- Modern Pentathlon theory and practical applications

National Team Coordinators, 4th level

The coordinator of national teams is appointed by the Federal Council FIPM. The qualification identifies coaches capable of working with tasks of responsibilities of complex teams in national and international contexts of high level, competent to participate and to direct research and training activities or federal programs of talent development: Technical Director of national teams, Head of industry. The training course aims to deepen knowledge regarding biological, physiological and psychological adaptations of training methods and training planning. In addition, major general issues are explored in the advanced categories such as nutrition, medical aspects and health care. The course is currently being run by the C.O.N.I. School of Sport.

Data provided by the Technical Commissioner of the Italian Youth Nationals

Knowledge					5
Technical knowledge					5
Tactical knowledge				4	
Physical training					5
Mental training					5
Mentoring				4	
Group dynamics					
Leadership					5
Team building and management					5
Cooperation					5
Communication					5
Empathy					5
Emotional intelligence					5
Managerial skills					
Time management				4	
Decision-making ability					5
Setting goals					5
Self-control				4	
Ability to solve problems				4	
Conflict resolution					5

The Mental Aspect

It is without a doubt that a coach, whether he/she coaches national teams or categories of very young people, is subjected to intense psychological and mental involvement with athletes, and therefore we can speak of actual ***"emotional performance".*** The coach is to be considered a

"special *athlete*" because he/she has to make rational and irrational decisions. His/her role assumes a relationship with the public at multiple levels and therefore he/she must have a solid psychological structure, resistant to the various stress factors.

In order to have a connection with the athletes, coaches must know their roles and understand the group dynamics. If coaches want to be aspirational, they have to practice and train.

But how do Italian technicians train?
What do they do to achieve the "form" and maintain it?

The first condition is to stay healthy: physically, psychologically and morally. At the beginning of the year, and also during the season, a medical check up is required.
Another important aspect is the private life and being a role model. It is essential, therefore, not to neglect familiy life and have time for them to recharge the batteries emotionally. Would you believe a doctor who smokes when he/she tells you that smoking is harmful to your body?

Another important aspect is the collection of experiences that are obtained through the observation and analysis of events in order to have data ready to be used for the improvement of the athletes' performances., For this purpose, it is advisable to make an end-of-season report and take notes in each workout.

A coach has *an obligation to study and update* continuously otherwise it would be impossible to properly educate the new generations of athletes who would like to be coaches. The Federations themselves should promote the organization of internships aimed at training technicians. To do this, attendance certificates must become a mandatory part of a technician's resume. Bringing the coaches together also means making them interact directly, facilitating the exchange of experiences and ideas; discuss how to deal with athletes, expose new models of preparation, new technicaltactical notions, formulate criteria for evaluation of athletes, analyze communication modes. These and other themes could be a good work programme.

Sports practice would also be great help to coaches; training, according to their own possibilities, to personally experience fatigue, playing amateur sports to deal physically and mentally with athletes of equal dexterity, would make the technician more believable and trustworthy, more tolerant toward the mistakes his students might make.

Mental training is a fundamental aspect for coaches, composed of psychological techniques aimed at the management of one's inner states and the control of external behaviors. The internal skills, conscious and unconscious, to be acquired and/or reinforced, can be distinguished in two different sets: cognitive and affective. A valid psychological test could provide a more complete picture. The actual training will consist of simulating crucial situations, in which coaches will find themselves during a season. Following the space-time criterion they can start with:

1) simulate the first day of national gathering and ask coaches what kind of emotions they feel; later, develop a set of goals to pursue, establish rules of conduct (internal pacts) and how to authoritatively communicate their decisions to the public. Training basic anxiety and underlying motivation are the first purposes.

2) Mentally represent the types of training.

3) Mentally simulate the first important competitive event (national or international) by announcing to the athletes the chosen team. The language to be adopted with athletes, with all its nuances, plays a decisive role at least in two aspects: communication identified as understanding and being understood, and the degree of authority that will be achieved towards athletes. It is essential, therefore, to speak a common language.

4) During a training session arrange technical adjustments (this type of decisions, in addition to being stimulating and training, show the character and authority of the technician, and his empathetic abilities).

5) Get used to the inner conflict between what you did and what could have been done. Only a good conversation with yourself is positive to maintain self-esteem.

6) How to live on the eve of a race and then what to do to support concentration, and present yourself with the mood appropriate to the performance (of the technician) required.

7) Practice verbal and gesture communication to indicate tactical changes, rhythm and so on, as if you were really in the race. Especially in the Pentathlon each discipline has its own "slang" and its gestures.

8) To empathize with the situation between the intervals of the individual disciplines ,and depending on the assumed result, express the arguments to be supported.

9) Undergo a series of refereeing errors (e.g. fencing) and focus your mood to exercise self-control of aggression. Good management of your emotional rations will really help the athlete who is the victim of refereeing error.

10) Be empathic with the athletes and "feel" the fears (defeat/win – good/bad performance of athletes) that come to their minds, and support the athletes.

11) Think of the scenario after a disappointing performance and find the words for such occasion (relational skills).

12) Prepare and be ready for the group discussions ,think about the appropriate approach method and content(personality demonstration)

Empirical research

We also asked athletes about their learning needs for developing into coach/trainer. We present our findings in table 2.

For each modern pentathlon discipline the mean scores for the three learning needs (i.e., knowledge, team dynamics, and management skills) and the individual items (i.e., all descriptors below each factor), for each of the two rating scales (i.e. importance and possession), but also their product (i.e., need - after reversing scores for possession), as indicative of the prioritization of athletes' needs. Overall, the need priorities for the knowledge among the five sports are: (a) for swimming, athletes scored higher for tactical knowledge and mental training, (b) for running, athletes scored higher for tactical knowledge and mental training, (c) for fencing, the athlete scored higher for physical and mental training, (d) for shooting, the athlete scored higher for tactical and technical knowledge, (e) for equestrian, the athlete scored higher for tactical knowledge and mentoring. Additionally, the need priorities for the team dynamics among the five sports are: (a) for swimming, the athlete scored higher for communication and leadership, (b) for running, athletes scored higher for empathy and emotional intelligence, (c) for fencing, the athlete scored higher for emotional intelligence, communication, and empathy, (d) for shooting, the athlete scored higher for leadership and team building, (e) for equestrian, the athlete scored higher for team building and communication. Finally, the need priorities for the management skills among the five sports are: (a) for swimming, athletes scored higher for time management and self-regulation, (b) for running, athletes scored higher for goal setting and conflict resolution, (c) for fencing, the athlete scored higher for time management, goal setting, and conflict resolution, (d) for shooting, the athlete scored higher for decision making and self-regulation, (e) for equestrian, the athlete scored higher for conflict resolution, time management, and goal setting.

Table 2. Mean scores for learning needs for developing into coach/trainer (Imp: Importance, Pss: Possession, Nd: Need)

	SWIMMING			*RUNNING*			*FENCING*			*SHOOTING*			*EQUESTRIAN*		
	Imp	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**	**Imp**	**Pss**	**Nd**
Knowledge	**4.24**	**3.52**	**10.10**	**4.03**	**3.18**	**11.37**	**4.20**	**3.00**	**13.00**	**2.40**	**1.60**	**10.6**	**4.20**	**3.80**	**9.00**
Technical knowledge	4.33	3.55	10.22	4.36	3.00	12.90	4.00	3.00	12.00	3.00	2.00	12.00	4.00	4.00	8.00
Tactical knowledge	4.22	3.33	10.77	3.63	3.00	11.09	4.00	3.00	12.00	3.00	1.00	15.00	5.00	4.00	10.00
Physical Training	4.22	3.55	10.11	3.81	3.18	10.63	5.00	2.00	20.00	2.00	1.00	10.00	3.00	3.00	9.00
Mental training	4.55	3.66	10.33	4.45	3.18	12.45	5.00	3.00	15.00	2.00	2.00	8.00	4.00	4.00	8.00
Mentoring	3.88	3.55	9.11	3.90	3.54	9.81	3.00	4.00	6.00	2.00	2.00	8.00	5.00	4.00	10.00
Team dynamics	**4.21**	**3.90**	**8.33**	**3.93**	**3.43**	**9.81**	**3.50**	**3.00**	**10.66**	**1.00**	**1.66**	**4.33**	**4.16**	**4.33**	**7.00**
Leadership	4.33	3.66	9.55	4.27	3.72	9.63	3.00	3.00	9.00	1.00	1.00	5.00	4.00	4.00	8.00
Team building	4.22	3.88	8.11	3.36	3.63	7.63	3.00	3.00	9.00	1.00	1.00	5.00	5.00	4.00	10.00
Cooperation	3.66	4.22	6.00	3.18	3.18	8.90	3.00	4.00	6.00	1.00	2.00	4.00	3.00	5.00	3.00
Communication	4.33	3.55	10.00	4.54	3.63	10.63	4.00	3.00	12.00	1.00	2.00	4.00	5.00	4.00	10.00
Empathy	4.33	4.22	7.33	4.36	3.36	11.18	4.00	3.00	12.00	1.00	2.00	4.00	4.00	4.00	8.00
Emotional intelligence	4.44	3.88	9.00	3.90	3.09	10.90	4.00	2.00	16.00	1.00	2.00	4.00	4.00	5.00	3.00
Management skills	**4.10**	**3.84**	**8.14**	**3.85**	**3.38**	**9.63**	**3.00**	**3.33**	**8.16**	**2.00**	**1.33**	**9.50**	**4.50**	**4.00**	**8.83**
Time management	4.22	3.77	8.88	4.27	3.81	8.90	4.00	3.00	12.00	1.00	1.00	5.00	5.00	4.00	10.00
Decision making	3.88	3.88	7.33	3.81	3.72	8.00	2.00	3.00	6.00	3.00	1.00	15.00	5.00	5.00	5.00
Goal setting	4.11	3.88	8.00	4.45	3.45	10.90	3.00	2.00	12.00	2.00	1.00	10.00	5.00	4.00	10.00
Self-regulation	4.11	3.77	8.44	3.27	3.09	9.27	2.00	4.00	4.00	3.00	1.00	15.00	4.00	4.00	8.00
Problem solving	3.88	3.77	7.88	3.81	3.36	9.81	3.00	5.00	3.00	2.00	2.00	8.00	4.00	4.00	8.00
Conflict resolution	4.44	4.00	8.33	3.54	2.90	10.90	4.00	3.00	12.00	1.00	2.00	4.00	4.00	3.00	12.(

4. CHALLENGES AND PROSPECTS IN SPORT / DUAL CAREER

Today in Italy when we talk about dual career for “high-level” athletes, the first thing that comes to mind is the support system linked to military sport bodies. In other words, athletes can train and participate in international competitions as they have the possibility to work at one of the military corps at the end of their sport career, receiving a salary from the organization/branch they are members of.

This program, which has brought so much glory and many results for Italy, definitely has some things to be criticized due to its economic inflexibility of recent decades and the fact that its offer is very limited to a professional athlete, way to specific and not suitable to all athletes, or does not meet the expectation of the athletes.

Those athletes who do not fit into this program – with the exception of very few professional sports– or for those who do not wish to remain in the military at the end of their careers, the end of their sport careers may coincide with a very difficult time in their lives, in which the "amateur" sport activity may not have been enough to launch a professional sport career on a market that is increasingly difficult and competitive, even for those who have achieved impressive results like winning an Olympic medal.

In many Western countries (also emerging countries, for example Asian countries that adopted many elements from the Anglo-Saxon model of higher education) there is a very strong link between sport career and university studies. This system has many advantages for all major stakeholders:

- For athletes, because they can study and train at the same time;
- For Universities, because the athlete-students set a great example for other students and they can attract new funding opportunities and possible research and innovation;
- For the national sports movement, because they can understand better the professional and cultural aspirations of their talented athletes;
- For the Federations, because Universities could be important partners contributing to the harmonious personality and character development of the athletes and they could carry out scientific and technological studies that could improve the performance of the athletes.

This is in line with the principles of the university sports movement (represented by FISU whose motto is "Excellence in Mind and Body" and in Italy by CUSI). Unfortunately, on this aspect Italy is a little bit behind: very few universities offer support to “high-level student-athletes”, those universities that created local programs, do not cooperate with other educational institutions: most athletes who attend universities remain “invisible” to the university, therefore do not receive support.

Dual career challenges

The success of dual career arrangements often depends on the goodwill of key people in organisations and institutions, but a sustainable, systematic approach based on financial and legal arrangements would be needed. The growing trend of athletes regularly training and/or competing abroad makes this matter even more complex. There is a demand for remote studying and individualized training courses, but at the same time extra "holidays" are a big problem in the labour market. There are studies that show that athletes are at a disadvantage compared to other workers in the labour market. Companies may find it difficult to adapt to the needs of athletes in the field of work, the needs that are constantly changing according to the different stages of their career. Governments, various organisations and athletes have drawn attention to these challenges as well as concerns about the quality of education and support services for young people involved in elite sport in Europe. The main challenges are:

- Ensuring the development of young athletes, especially children in early-specialization sports, young people in the field of education and vocational training, and disabled athletes;
- The balance between sports training and education and, at a later stage of life, the balance between sports training and employment;
- The end-of-career phase of athletes, including those who leave the system earlier than expected.

Interview with an Italian national team coach

- *What professional opportunities exist in the World of Pentathlon, for an athlete, at the end of his/her active, competing career?*
  Very few opportunities exist, but there are athletes who collaborate with the federation as technicians, referees or managers, same of them also in the international federation UIPM (Union Internationale de Pentathlon Moderne)

- *What educational programs exist to "prepare" athletes for their work life, after their competitive career?*
  In the pentathlon federation, there is the reimbursement of 50% of tuition fees, introduced two years ago, but unfortunately I am not aware of other programs.

- *Are there any projects/programs that facilitate the transition from the end of the sporting career to the entry of the "world of work"?*
  For those athletes who are in military sport groups at the end of the career, there is an automatic transaction. For other, non-military athletes the situation is more difficult o carry on doing sport.

Empirical research

Here we present (Table 3) the mean scores for functional and personal challenges and obstacles based on the data collected through questionnaires, Overall, the results for the functional challenges/obstacles among the five sports are: (a) for swimming, athletes scored higher for lack of time/energy and limited access to training facilities, (b) for running, athletes scored higher for lack of time/energy and lack of equipment, (c) for fencing, the athlete scored higher for lack of time/energy and limited access to training facilities, (d) for shooting, the athlete scored low on all variables, and (e) for equestrian, the athlete scored low for all variables. Additionally, the results for the personal challenges/obstacles among the five sports are: (a) for the swimming, athletes scored higher for stress and injuries, (b) for the running, athletes scored higher for injuries and family life demands, (c) for the fencing, athletes scored higher for stress, injuries, and family life demands, (d) for the shooting, athletes scored low on all variables, (e) for the equestrian, the athlete scored higher for injuries.

Table 3. Mean scores for functional and personal challenges and obstacles by individual discipline

	SWIMMING	*RUNNING*	*FENCING*	*SHOOTING*	*EQUESTRIAN*
Functional	**2.88**	**2.41**	**2.83**	**1.33**	**1.83**
Lack of time / energy	3.66	2.90	5.00	1.00	2.00
Limited access to training facilities	3.11	2.54	4.00	2.00	1.00
Transportation	2.33	2.54	2.00	1.00	2.00
Financial burden	2.66	1.90	2.00	1.00	2.00
Lack of equipment	2.66	2.72	2.00	2.00	2.00
Organizational structures in sport	2.88	1.90	2.00	1.00	2.00
Personal	**2.59**	**2.25**	**2.88**	**1.66**	**2.22**
Stress	3.55	2.63	4.00	2.00	2.00
Injuries	3.33	3.27	4.00	2.00	4.00
Lack of motivation / commitment	2.00	2.36	2.00	2.00	2.00
Emotional stability	2.33	2.00	2.00	2.00	2.00
Media / social media	2.11	1.90	2.00	2.00	2.00
Peer pressure	2.55	1.72	4.00	1.00	2.00
Parental pressure	2.00	1.90	2.00	1.00	2.00
Pressure from coach	2.44	1.81	2.00	1.00	2.00
Family life demands	3.00	2.72	4.00	2.00	2.00

Finally, for ***section 4*** participants' responses are summarized in Table 4. Overall, the results showed that runners and swimmers had similar patterns in awareness, interest and prospects in Modern Pentathlon. No conclusions were extracted for fencing, shooting, and equestrian.

Table 4. Prospects for a dual career in modern pentathlon.

	SWIMMING		RUNNING		FENCING		SHOOTING		EQUESTRIAN		TOTAL
	YES	NO	YES	NO	YES	NO	YES	NO	YES	NO	%YES
1. Have you ever heard about the Modern Pentathlon	8	1	11	0	1	0	1	0	0	1	38%
2. Have you ever looked for information regarding the Modern Pentathlon	3	6	4	7	0	1	0	1	0	1	14%
3. Do you know what sports comprise the Modern Pentathlon	7	2	10	1	1	0	1	0	0	1	33%
4. Have you ever considered becoming involved in the Modern Pentathlon as athlete	4	5	3	8	0	1	0	1	0	1	19%
5. Would you be interested to eventually become involved with Pentathlon as a trainer in your sport	8	1	5	6	1	0	0	1	1	0	38%
recreational / competitive / both	5/0 /3		4/0 /1		1/0 /0		1/0 /0		1/0 /0		
6. Would you consider as a dual career opportunity as a Modern Pentathlon trainer	8	1	5	6	1	0	0	1	1	0	38%
recreational / competitive / both	5/0 /3		5/0 /0		1/0 /0		0/0 /0		1/0/ 0		
7. How feasible you think it is to combine in the future your career with a career in Pentathlon	8	1	5	6	1	0	0	1	0	1	38%
8. Do you know if there is a pentathlon club in your area	3	6	8	3	0	1	0	1	0	1	14%
9. Do you know anyone doing pentathlon recreationally	5	4	5	6	0	1	0	1	0	1	24%
10. Do you know anyone doing pentathlon competitively	2	7	3	8	0	1	0	1	0	1	10%
11. Could you see in a prospect for a career in Pentathlon (as a secondary occupation)	6	3	5	6	1	0	0	1	1	0	29%
12. Are you willing to get appropriate education/training to purse a Pentathlon-related job (as a secondary occupation)?	8	1	5	6	1	0	1	0	1	0	38%

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- https://www.pentamodena.com/

BEST PRACTICES

BEST PRACTICE 1

Name of the Project/Organization	**Pentamodena**
Type of organization	Amateur sport club
Country	Italy
Description of the practice (project or organisation)	Pentamodena was founded in 1968 with the vision of promoting the different disciplines of modern pentathlon and encouraging people to live an active and healthy life.
Relevance to the EHPARP project	The sport club runs several projects for people at various age groups. They organize summer camps, winter camps and trainings.
Impact of the practice	- Pentamodena is an expert of fencing, pentathlon, triathlon, swimming, running and waterpolo.

References, sources	https://www.pentamodena.com/ https://www.facebook.com/pentamodena/?ref=page_int ernal

BEST PRACTICE 2

Name of the Project/Organization	**Italian Federation of Modern Pentathlon**
Type of organization	Sport federation
Country	Italy
Description of the practice (project or organisation)	The Italian Federation of Modern Pentathlon promotes the activities of modern pentathlon and one of the most significant players in Italy in this sport discipline. Their area of expertise includes but not limited to providing training opportunities, helping the athletes, employing coaches and medical staff, organizing training session etc.
Relevance to the EHPARP project	The Italian Federation of Modern Pentathlon can be a supporting partner of this project as it is a reference point
Impact of the practice	- to anyone in Italy who is interested in practicing the sport disciplines of the modern pentathlon.
References, sources	The Federation helps the athletes to reach their full potential and helps them during their sport careers. www.fipm.it

SUMMARY OF RESEARCH ACROSS THE FIVE COUNTRIES

In this section we summarize the needs of athletes from the individual pentathlon disciplines with regard to (a) their sport training, as those evolved through the assessment of extant skills and skill importance, and (b) their training needs as potential pentathlon coaches, as those evolved through the assessment of extant skills and skill importance.

SPORT TRAINING NEEDS – PHYSICAL AND MENTAL SPORT

Regarding the sport training needs, it appeared that overall there was a slightly greater need for athletes to improve their mental training more that their physical training. In Greece, the priority for mental training was found in shooting and swimming, whereas the priority for physical training in swimming, running, and equestrian; in Estonia, the priority for mental training was found in all pentathlon disciplines, in Bulgaria, the priority for mental training was found in shooting and equestrian, whereas the priority for physical training in fencing, swimming, and running; in Croatia, the priority for mental training was found in swimming, running, and shooting, whereas the priority for physical training in fencing and equestrian; finally, in Italy, the priority for mental training was found in running, whereas the priority for physical training in shooting (for other disciplines the priority was equal).

Among the physical training needs for athletes, the most prioritized one was that for muscular endurance, followed by cardiovascular endurance. In particular, muscular endurance was identified as the first priority in Greece, Bulgaria, Croatia, and Italy. Cardiovascular endurance was found as the first priority in Estonia, and as second priority in Greece, Bulgaria, and Croatia. Among the mental training needs for athletes, the most prioritized one was that for anxiety control, followed by relaxation and confidence. In particular, anxiety control was identified as the first priority in Greece and Italy, as a second priority in Croatia, and as a third priority in Bulgaria. Relaxation was identified as the first priority in Estonia and Bulgaria and Croatia. Finally, confidence was identified as a second priority in Greece, and as third in Croatia and Italy.

TRAINING NEEDS TOWARDS COACHING

Regarding the training needs to becoming a coach in one of the pentathlon disciplines, it appeared that overall there was a slightly greater need for athletes to improve their knowledge, followed by team dynamics, and management skills. Knowledge was the first priority in Greece, Bulgaria, Croatia, and Italy, and third priority in Estonia. Team dynamics was the first priority in Estonia, second priority in Bulgaria and Croatia, and third priority in Greece, and Italy. Finally, management skills were the second priority in Greece, Estonia, and Italy, and third priority in Bulgaria and Croatia.

Among the needs for knowledge, the most prioritized ones were those for mental training and mentoring. In particular, mental training was identified as the first priority in Greece, Estonia, Bulgaria, and as a second priority in Italy; mentoring was identified as a second priority in Greece, Estonia, Bulgaria, and Croatia.

Among the needs for team dynamics, the most prioritized ones were those for team building, followed by leadership, emotional intelligence, communication. In particular, team building was identified as the first priority in Bulgaria and Croatia, and as a second priority in Greece; leadership was identified as the first priority in Greece and Estonia; communication was identified as a first priority in Italy and second in Estonia; finally, emotional intelligence was identified as a second priority in Croatia and Italy.

Among the needs for management skills, the most prioritized ones were those for goal-setting, self-regulation, and conflict resolution. In particular, goal-setting was identified as the first priority in Greece and Italy, and as a second priority in Bulgaria; self-regulation was identified as the first priority in Croatia and second in Estonia; conflict resolution was identified as a second priority in Croatia and Italy.

CHALLENGES

Regarding the challenges athlete phase, it appeared that the biggest challenges involved functional rather than personal challenges. In Greece, the functional challenges were higher in all sports except shooting; In Estonia, the functional challenges were higher in shooting and equestrian, whereas the personal challenges were higher for running, swimming, and fencing; In Bulgaria, the functional challenges were higher in running, shooting and equestrian, whereas the personal challenges were higher for swimming, and shooting; in Croatia, the functional challenges were higher in all sports; in Italy, the functional challenges were higher in running and swimming, , whereas the personal challenges were higher for fencing, shooting and equestrian.

Among the functional challenges, the most prioritized ones were financial burden and organizational structure. In particular, financial burden was the greatest challenge in Greece, Estonia, and Bulgaria; organizational structures were the second greatest challenge in Greece, Estonia, and Croatia. Among the personal challenges, stress was the greatest one, followed by injuries and emotional stability. In particular, stress was rated first in Greece and Estonia, and the second in Bulgaria and Italy. Injuries were rated first in Italy and second in Estonia, and emotional stability was rated first in Croatia and second in Greece.

PROSPECTS

Overall, from the section on prospects it appeared that among the participants of the survey there is little knowledge and awareness regarding the modern Pentathlon. In particular, only 20% had ever searched for information regarding pentathlon and 50% knew the pentathlon sports. In addition, 20% were knew whether there was a pentathlon club in their area,

whereas 27% and 20% knew athletes competing in pentathlon recreationally or competitively, respectively. With regard to their interest getting involved as trainer/coach, 46% responded that they would be interested getting involved and 38% responded they would consider a dual career. Finally, with regard to career prospects, 52% reported interest for getting education on pentathlon, however, only 36% thought they could combine their future career with a career in pentathlon. Among all participants, mostly interested for a dual career were those from equestrian and swimming with 59% and 53% respectively, whereas those with the least interest were shooters.

APENDIX 1

SPORT SURVEY

The European Project "Enhancing Health and Physical Activity Rates through Pentathlon (EHPARP)", aims at employing Pentathlon as a tool of promoting health-enhancing physical activity among the European youth and adult populations as well as providing dual career opportunities to Athletes in the individual disciplines forming part of Pentathlon practice who will be empowered as Coaches/Trainers in their disciplines and in comprehensive programmes of Pentathlon for an adult and a youth audience.

This is a survey about your participation in sport. You will find below questions relating to your sport, required skills and competences, and some regarding your future prospects within your sport. The survey is anonymous and therefore all data are confidential, so please reply with honesty.

DEMOGRAPHICS	
Gender	Male / Female
Age	
Education level	High school / University
Your Sport	
Years in your sport	
Years in competition	
Training days per week	
Training hours per week	
Competitive level	Local/Regional / National / International
Highest achievement	

Co-funded by the Erasmus+ Programme of the European Union

A. Extant skills of athletes

Below you will find a list of skills that are considered important **for becoming a successful athlete** in different sports. There are two answering columns: in the first column you should reply how important is each skill for your sport; in the second column you should reply the extent to which you possess this skill. Please reply to the two columns based on the following scales.

Importance of this skill for your sport

1	2	3	4	5
Not that important	Somewhat important	Important	Very important	Extremely important

Extent to which you possess this skill

1	2	3	4	5
Not at all	To some extent	To an average extent	To a large extent	Fully

	Importance of this skill for your sport						Extent to which you possess this skill				
Physical attributes											
1. Muscular Endurance	1	2	3	4	5		1	2	3	4	5
2. Cardiovascular endurance	1	2	3	4	5		1	2	3	4	5
3. Speed	1	2	3	4	5		1	2	3	4	5
4. Flexibility	1	2	3	4	5		1	2	3	4	5
5. Strength	1	2	3	4	5		1	2	3	4	5
6. Coordination	1	2	3	4	5		1	2	3	4	5
7. Power / Acceleration	1	2	3	4	5		1	2	3	4	5
8. Peripheral vision	1	2	3	4	5		1	2	3	4	5
9. Spatial awareness	1	2	3	4	5		1	2	3	4	5
Mental attributes											
1. Concentration	1	2	3	4	5		1	2	3	4	5
2. Relaxation	1	2	3	4	5		1	2	3	4	5
3. Arousal regulation	1	2	3	4	5		1	2	3	4	5
4. Accuracy	1	2	3	4	5		1	2	3	4	5
5. Anxiety control	1	2	3	4	5		1	2	3	4	5
6. Confidence	1	2	3	4	5		1	2	3	4	5
7. Emotion regulation	1	2	3	4	5		1	2	3	4	5
8. Anticipation	1	2	3	4	5		1	2	3	4	5
9. Mental toughness	1	2	3	4	5		1	2	3	4	5

B. Learning needs of athletes for developing into coach/trainers

Below you will find a list of skills that are considered important **for becoming a successful trainer/coach**. There are two answering columns: in the first column you should reply how important is each skill/competence for your sport; in the second column you should reply the extent to which you possess this skill. Please reply to the two columns based on the following scales.

Importance of this skill for your sport

1	2	3	4	5
Not that important	Somewhat important	Important	Very important	Extremely important

Extent to which you possess this skill

1	2	3	4	5
Not at all	To some extent	To an average extent	To a large extent	Fully

	Importance of this skill for your sport						Extent to which you possess this skill				
Knowledge	1	2	3	4	5		1	2	3	4	5
1. Technical knowledge	1	2	3	4	5		1	2	3	4	5
2. Tactical knowledge	1	2	3	4	5		1	2	3	4	5
3. Physical Training	1	2	3	4	5		1	2	3	4	5
4. Mental training	1	2	3	4	5		1	2	3	4	5
5. Mentoring	1	2	3	4	5		1	2	3	4	5
Team dynamics											
1. Leadership	1	2	3	4	5		1	2	3	4	5
2. Team building and management	1	2	3	4	5		1	2	3	4	5
3. Cooperation	1	2	3	4	5		1	2	3	4	5
4. **Communication**	1	2	3	4	5		1	2	3	4	5
5. Empathy	1	2	3	4	5		1	2	3	4	5
6. Emotional intelligence	1	2	3	4	5		1	2	3	4	5
Management skills											
1. Time management	1	2	3	4	5		1	2	3	4	5
2. Decision making	1	2	3	4	5		1	2	3	4	5
3. Goal setting	1	2	3	4	5		1	2	3	4	5
4. Self-regulation	1	2	3	4	5		1	2	3	4	5
5. Problem solving	1	2	3	4	5		1	2	3	4	5
6. Conflict resolution	1	2	3	4	5		1	2	3	4	5

C. Challenges and obstacles

Below you will find a list of challenges and obstacles athletes of different sports have to face in their career. Please indicate the degree to which these challenges and obstacles apply for you based on the following scale.

1	2	3	4	5
Do not apply at all	Apply somewhat	Apply reasonably	Apply a lot	Apply fully

Functional					
1. Lack of time / energy	1	2	3	4	5
2. Limited access to training facilities	1	2	3	4	5
3. Transportation	1	2	3	4	5
4. Financial burden	1	2	3	4	5
5. Lack of equipment	1	2	3	4	5
6. Organizational structures in sport	1	2	3	4	5
Personal	1	2	3	4	5
1. Stress	1	2	3	4	5
2. Injuries	1	2	3	4	5
3. Lack of motivation / commitment	1	2	3	4	5
4. Emotional stability	1	2	3	4	5
5. Media / social media	1	2	3	4	5
6. Peer pressure	1	2	3	4	5
7. Parental pressure	1	2	3	4	5
8. Pressure from coach	1	2	3	4	5
9. Family life demands	1	2	3	4	5
Other (please specify) …					

D. PROSPECTS/OPPORTUNITIES OF DUAL CAREER FOR THE DEVELOPMENT OF PENTATHLON

A DUAL CAREER REFERS TO THE REQUIREMENT FOR ATHLETES TO SUCCESSFULLY INITIATE, DEVELOP AND FINALIZE AN ELITE SPORTING CAREER AS PART OF A LIFELONG CAREER, IN COMBINATION WITH THE PURSUIT OF EDUCATION. OUR AIM, THROUGH THIS PROJECT IS TO EXPLORE THE PROSPECTS OF DUAL CAREER IN RELATION THE MODERN PENTATHLON. PLEASE REPLY THE FOLLOWING QUESTIONS.

1. **HAVE YOU EVER HEARD ABOUT THE MODERN PENTATHLON?**

YES NO

2. **HAVE YOU EVER LOOKED FOR INFORMATION REGARDING THE MODERN PENTATHLON?**

YES NO

3. **DO YOU KNOW WHAT SPORTS COMPRISE THE MODERN PENTATHLON?**

A. _____

B. _____

C. _____

D. _____

E. _____

4. **HAVE YOU EVER CONSIDERED BECOMING INVOLVED IN THE MODERN PENTATHLON AS ATHLETE?**

YES NO

5. **YOUR SPORT IS PART OF THE MODERN PENTATHLON! WOULD YOU BE INTERESTED TO EVENTUALLY BECOME INVOLVED WITH PENTATHLON AS A TRAINER IN YOUR SPORT?**

YES NO

IF YES, WOULD YOU LIKE TO TRAIN (TICK ALL THAT APPLY)

A. RECREATIONAL ATHLETES
B. COMPETITIVE ATHLETES

6. **WOULD YOU CONSIDER AS A DUAL CAREER OPPORTUNITY AS A MODERN PENTATHLON TRAINER?**

YES NO

IF YES, WOULD YOU LIKE TO TRAIN (TICK ALL THAT APPLY)

A. RECREATIONAL ATHLETES **B. COMPETITIVE ATHLETES**
7. WOULD IT BE FEASIBLE TO COMBINE IN THE FUTURE YOUR CAREER WITH A CAREER IN PENTATHLON
YES NO
8. DO YOU KNOW IF THERE IS A PENTATHLON CLUB IN YOUR AREA?
YES NO
9. DO YOU KNOW ANYONE DOING PENTATHLON RECREATIONALLY?
YES NO
10. DO YOU KNOW ANYONE DOING PENTATHLON COMPETITIVELY?
YES NO
11. COULD YOU SEE IN A PROSPECT FOR A CAREER IN PENTATHLON (AS A SECONDARY OCCUPATION)?
YES NO
12. ARE YOU WILLING TO GET APPROPRIATE EDUCATION/TRAINING TO PURSE A PENTATHLON-RELATED JOB (AS A SECONDARY OCCUPATION)?
YES NO