

STAYinBowling
Sensor based Training for Athletes and Youngsters in Bowling

**D2.1 –MOOC Curriculum and CoP Operation
Framework design**

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¹ From Grant Agreement

Contributing Partners

All the partners contributed to the deliverable.

Executive Summary

Based on research conducted by the consortium, this deliverable aims to identify the requirements of bowling instructors and participants in Malta and Greece. Following a description of the questionnaire's creation and participant attraction procedure, an examination of the findings is presented.

The subsequent section outlines the curriculum for a massive open online course (MOOC). This includes the following components: course title, ECTS, syllabus, mode of delivery (e.g., synchronous, asynchronous, gamified, blended), learning outcomes, general competencies, course content (syllabus), keywords, educational material types, utilization of information and communication technologies (with anticipated digital services support, such as e-content, assessment, etc.), and course or general competencies.

The deliverable concludes with the information flows, policies, responsibilities, and privileges within the Community of Practice (CoP) of the project.

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1 Introduction

1.1 Purpose of this document

The objective of this deliverable is based on research made the consortium to identify the needs of the bowling players and coaches in both Greece and Malta. After the description of the questionnaire and the method used to find participants, the analysis of the results is provided.

Then the massive open online course (MOOC) curriculum is presented, including elements of the course title, the ECTS, the Syllabus, the Mode of delivery (e.g. synchronous, asynchronous, gamified, blended, etc.), the Learning outcomes, the General competences, the Course content (syllabus), the Keywords, the Educational material types, the Use of Information and Communication Technologies (expected digital services support, e.g. e-content, assessment, etc.), the Course organization, the Student assessment description and methods and the Bibliography course like.

Finally, the deliverable ends with the policies, roles, rights and flows of information in the project's Community of practice (CoP).

1.2 Document structure

The present deliverable is split into 4 major chapters:

- Survey & Needs Collection
- Results Analysis
- Curriculum
- Policies, roles, rights and flows of information.

1.3 Audience

This document is public.

2 Survey & Needs Collection

In this section we will present the methodology used to collect data. The study sample is presented, and a brief description of the instrument used in the survey to gather the needs. The procedure that the consortium employed to find participants is summarized in the final part of the section.

2.1 Sample

The representatives who participated in this study are detailed in this section.

The sample consists of 72 representatives, with an equal distribution of each country from the consortium's countries (Greece and Malta). 23.61% of the participants were female (**Figure 1**), while 76.39% were male.

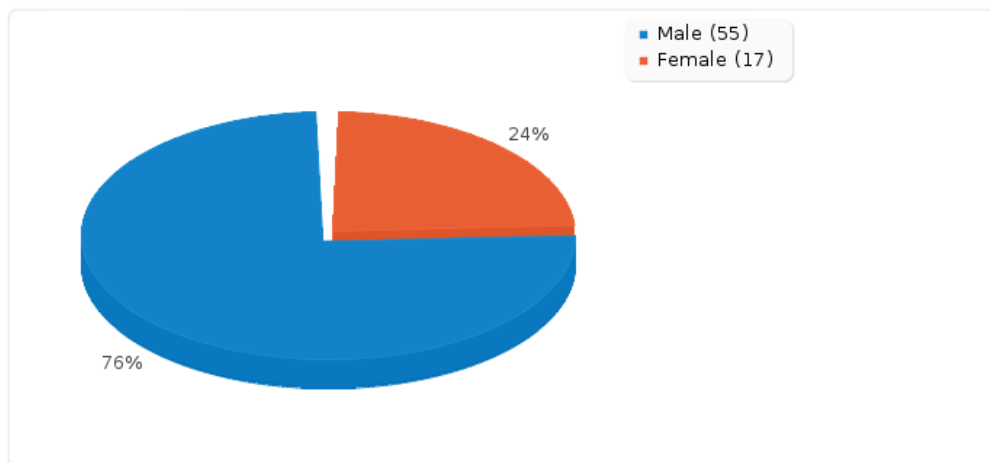


Figure 1 Sample of respondents according to their gender

Although the age distribution of the participants was diverse (**Figure 2**), the age group of 51-65 years (30.56% of the total) comprised the majority. The remaining participants comprised 19.44% those aged 10 to 20, 23.61% those aged 21 to 35, 22.22% those aged 36 to 50, and 4.17% those aged 66 to 80.

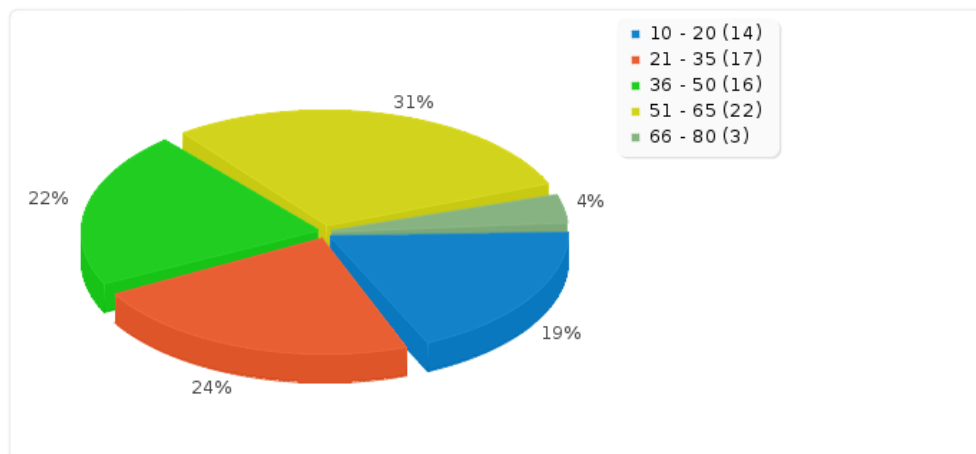


Figure 2 Sample of participants according to their age

The participants were questioned regarding their academic credentials (**Figure 3**). 32% of respondents hold a bachelor's or master's degree, while 13% have completed secondary school without obtaining a diploma or have no formal education.

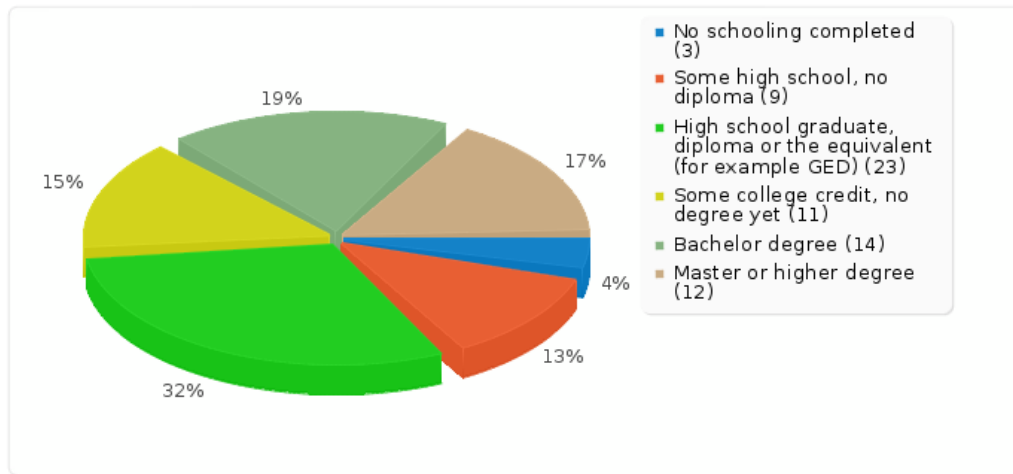


Figure 3 Sample of participants according to their level of education

In conclusion, the participants were requested to select a suitable description from a predetermined set of responses. They were presented with the following options: "Coach," "Student," "Physical Education Teacher," "Athlete (amateur)," "Athlete (professional)," and "Other." Participants were able to select an unlimited number of options.

Most of the respondents (64%) identified themselves as amateur athletes (**Figure 4**). Some of the respondents identified themselves as professional athletes (19%) and others as students (19%). Finally, only fourteen percent (14%) were coaches, but none of them were physical education teachers. Although "Other" was selected by the remaining participants, none of their responses formed a new coherent category.

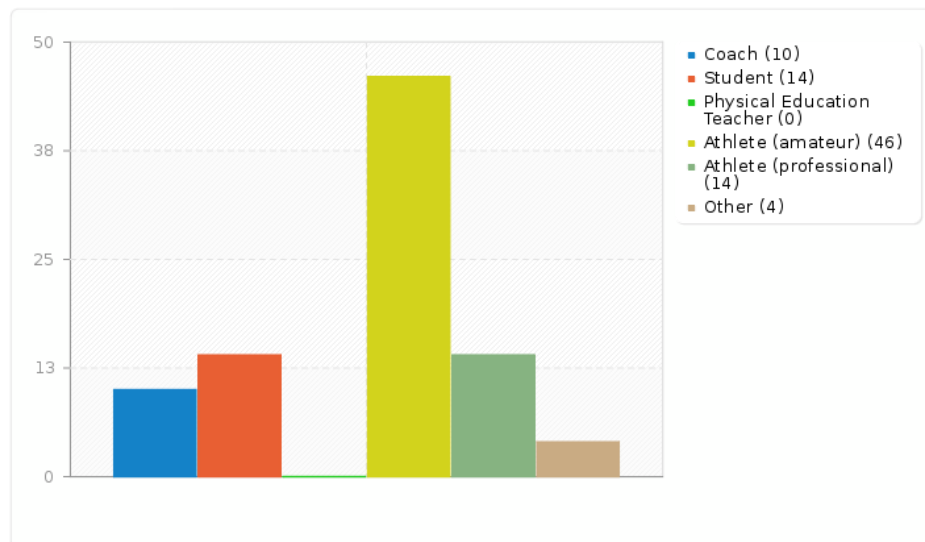


Figure 4 Sample of respondents' profile

2.2 Instrument

As an instrument for gathering data, the consortium developed a questionnaire. The survey was organized into the following five sections: (1) Demographic information; (2) Assessment of IT proficiency; (3) Bowling expertise; (4) Athletes' bowling experience; and (5) Coaches' bowling experience. The initial three sections were mandatory for all participants; nevertheless, they were granted access to sections four and five exclusively on the condition that they identified as either a bowling athlete or a bowling coach.

2.2.1 Demographic information

The first part of the survey asked about the participants' national origin, gender, age, educational background, and their profile (coach, student, PE teacher, Amateur athlete, Professional athlete, Other).

2.2.2 Assessment of IT proficiency

This section was composed of two different items, to evaluate their IT proficiency. A detailed description of each item is provided below:

- **Familiarization with Technology:** This item was composed of 6 sentences, which were used to evaluate their familiarity with technology. Each sentence was evaluated using an ascending five-point Likert scale, where a rating of one indicated strong disagreement and a rating of five indicated strong agreement.
- **Familiarization with Online Learning:** This four-sentence scale was utilized to assess the participants' inclination and expertise in the topic of online learning. Each sentence was evaluated using an ascending five-point Likert scale, where a rating of one indicated strong disagreement and a rating of five indicated strong agreement.

2.2.3 Bowling expertise

This part of the questionnaire was about building a profile for every participant and his/her involvement in the bowling game. It asked about the number of years the individual had been bowling, whether they had competed in an official bowling competition, if they are right or left handed and their playing style.

2.2.4 Athletes' bowling experience

The purpose of the bowling athlete part is to collect significant data regarding the athletes' level of involvement in the sport. It begins with the collection of fundamental respondent information, such as bowling experience in years. Following this, respondents are questioned regarding the frequency of their bowling sessions and equipment ownership status. In addition, the survey asks respondents about methods of learning and bowling-related experiences through the use of a five-point scale to indicate agreement with a range of statements. In the final step, participants are requested to rank the areas they want to improve in bowling, from rule knowledge to technique improvement.

2.2.5 Coaches' bowling experience

The bowling coaches' section is designed to collect valuable insights regarding their coaching experience and views. The questionnaire starts by questioning how many years of coaching experience the participants have, if they are bowling coaches. Following the presentation of a series of statements, coaches are requested to indicate their level of agreement or disagreement on a five-point scale. The aforementioned claims include a wide range of coaching-related topics,

such as the learning methods utilized (individual, group, online, etc.), the obstacles encountered during coaching, and the variables that impact the athletes or trainees. The survey additionally aims to ascertain the level of significance that coaches attribute to different parts of coaching

2.3 Procedure

To gather data, the collaborators from each participating country, initiated communication with representatives of the target groups in their respective nations. By using dissemination events and social media, the intended audience was reached. The response to the questionnaire was conducted electronically and physically on printed questionnaires. Twenty minutes were required for the respondents to respond to the questions. The voluntary nature of the questionnaire and the protection of data anonymity were both respected.

3 Results Analysis

3.1 Analysis of Assessment of IT proficiency

3.1.1 Familiarization with technology

Respondents were asked to fill in a five-point Likert scale their familiarization with technology and their perceived expertise on it. According to the results (**Table I**) most of the participants feel quite confident using technology in their everyday life and they can resolve technology related issues that may come up. More than half of them, answered that they agree or strongly agree with the statements shown to them.

Table I Descriptive analysis with percentages of the items under the scale “Familiarization with Technology”

QUESTIONS	1 or 2	3	4 or 5
I am good at using computers	8.00%	22.00%	67.00%
I am good at using smart devices such as mobile phones, tablets, etc.	3.00%	16.00%	79.00%
I can operate some basic software applications (e.g., MS Word, MS Excel, etc.)	9.00%	16.00%	74.00%
I am good at using the Internet	4.00%	10.00%	84.00%
I can resolve issues that may come up while using the Internet	7.00%	24.00%	68.00%
I can operate any basic web application required by (e.g., e-mail, blog, forums etc.)	9.00%	16.00%	74.00%

In particular, the items with the highest means were the “I am good at using the Internet” with a mean of 4.39 (SD=.93) and “I am good at using smart devices such as mobile phones, tablets, etc.” with a mean of 4.32 (SD=.89). The lowest-rated item was “I can resolve issues that may come up while using the Internet” with a mean of 3.83 (SD=1.17). **Table II** shows the results.

Table II Descriptive analysis of the items under the scale “Familiarization with Technology”

QUESTIONS	Mean	Std. Deviation
I am good at using computers	4.03	1.07
I am good at using smart devices such as mobile phones, tablets, etc.	4.32	0.89
I can operate some basic software applications (e.g., MS Word, MS Excel, etc.)	4.04	1.14
I am good at using the Internet	4.39	0.93
I can resolve issues that may come up while using the Internet	3.83	1.17
I can operate any basic web application required by (e.g., e-mail, blog, forums etc.)	4.11	1.12

3.1.2 Familiarization with Online Learning

Regarding the familiarization of the respondents with online learning, it can be seen (**Table III**) that they are aware of it and most of them find them useful and want to participate in them. However, most of them seem to prefer face to face teaching as more than half of them, disagree or strongly disagree with the respective statement.

Table III Descriptive analysis with percentages of the items under the scale “Familiarization with Online Learning”

QUESTIONS	1 or 2	3	4 or 5
I have experience on online learning activities	19.00%	15.00%	65.00%
I want to participate in online courses	21.00%	16.00%	62.00%
Online courses are very useful in developing my knowledge	15.00%	15.00%	69.00%
I prefer online teaching method and online courses than face to face teaching	56.00%	25.00%	18.00%

In particular, the item with “Online courses are very useful in developing my knowledge” had the highest mean of 3.86 (SD=1.28), followed by “I have experience on online learning activities” with the mean of 3.69 (SD=1.45), confirming their good intentions towards online classes. However, the statement with the lowest ranking was “I prefer online teaching method and online courses than face to face teaching” with a mean of 2.44 (SD=1.27), indicating that most of the participants disagree with it. **Table IV** shows the results.

Table IV Descriptive analysis of the items under the scale “Familiarization with Online Learning”

QUESTIONS	Mean	Std. Deviation
I have experience on online learning activities	3.69	1.45
I want to participate in online courses	3.61	1.34
Online courses are very useful in developing my knowledge	3.86	1.28
I prefer online teaching method and online courses than face to face teaching	2.44	1.27

3.2 Analysis of Bowling expertise

The participants were asked regarding the years that they are playing bowling to find their experience. A majority of them (56%) appear to be seasoned bowlers (**Figure 5**), having engaged in the sport for a duration exceeding ten years. 14% of the participants have been bowling for 5-10 years, compared to 17% (24 respondents) who have been doing so for 1-5 years. Four of our participants (6% of the total) have been bowling for less than a year, and one individual has never picked up the sport.

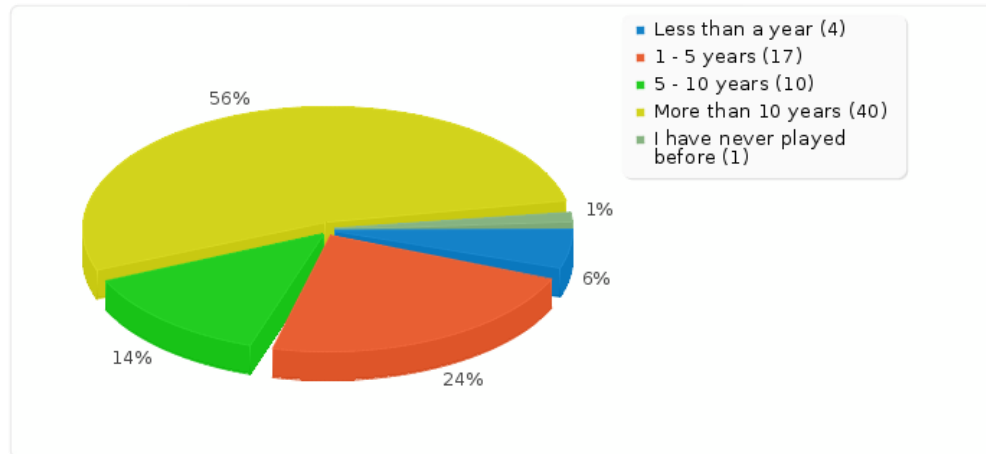


Figure 5 Sample of respondents according to the years playing bowling

The following question revealed that most of the respondents (90%) have participated in any form of bowling game in an official event, that was expected as most of them are quite experienced.

Regarding, their bowling profile, most of them (92%) are right handed, and 89% of the respondents are not two handed. Finally, hook ball players seem to be more than the straight ball players as they are 69% and 31% of the total, respectively.

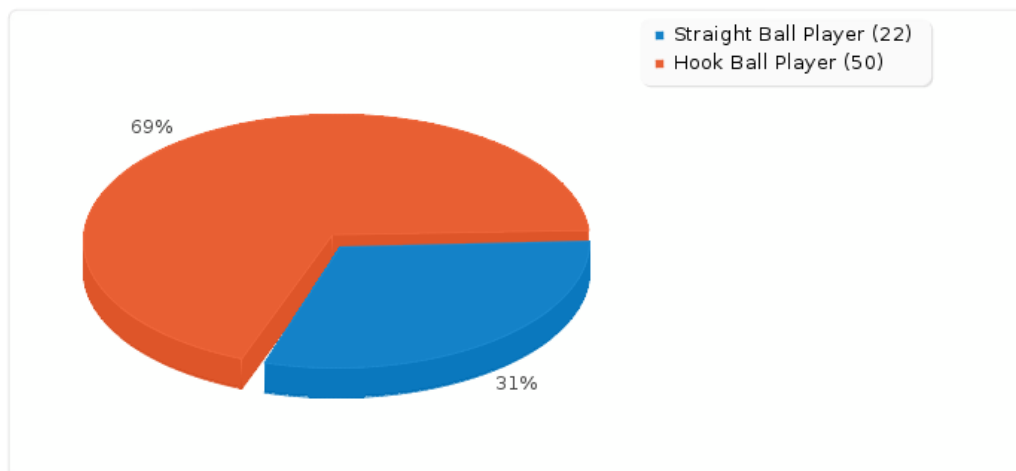


Figure 6 Sample of respondents according to their playing style

3.3 Analysis of Athletes' bowling experience

Upon answering "Yes" to the initial questioning regarding their status as bowling athletes, respondents were exclusively permitted to proceed to complete the subsequent sections of the questionnaire. Subsequently, 94% of the entire sample population disclosed their status as bowling athletes. The subsequent analysis in the section will provide percentages, with 100% representing 68 out of 68 individuals who identified themselves as bowling athletes.

The following part contained simple questions concerning the frequency of participation in sessions, which unveiled that the majority of our athletes (57%) engage in bowling activities 1-2 times per week. 35% of respondents played two to five times per week, 3% played one to two

times per month, 1% played two to three times per six months, and 4% played two to three times per year, as shown in the figure below (**Figure 7**).

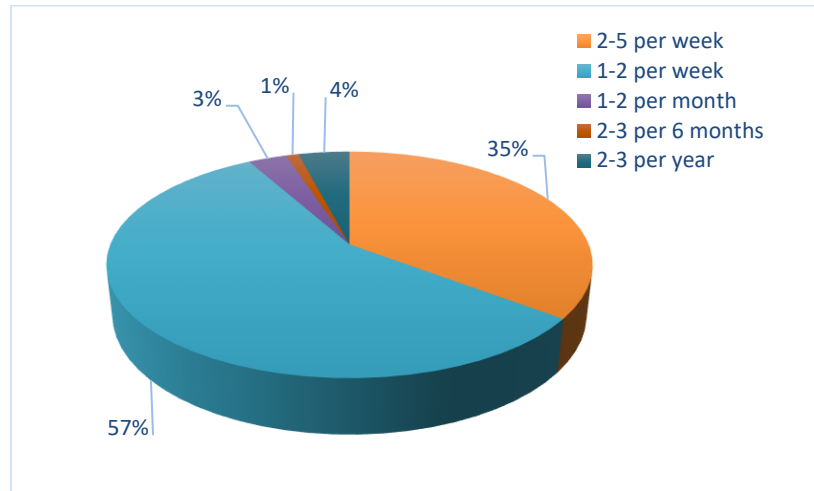


Figure 7 Sample of respondents (bowling athletes) according to their frequency of engagement in sessions

The following question revealed that most of our participants (90%) have their own equipment and the rest of them either do not have their own (4%) or they want to have their own equipment in the future (6%) as it can be seen in the following figure (**Figure 8**).

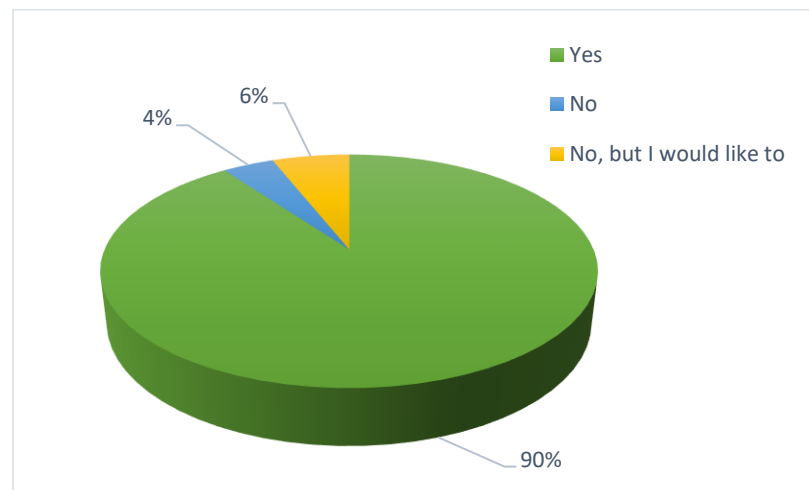


Figure 8 Sample of respondents (bowling athletes) according to their ownership of bowling equipment

Moreover, most of our participants (93%) are bowling club members and they are aware of the ongoing national bowling tournaments (88%).

3.3.1 Learning methods

Respondents were asked to fill in a five-point Likert scale their preferred learning methods and the way they have learned to play bowling from their own personal experience. The results can be found in **Table V**. Most of the athletes have learned to play bowling individually with a coach (51%) or with friends and fellow athletes (43%). As assistive material the YouTube videos seem to be the most popular (22%) comparing it to bibliography, forums, social media and seminars.

Finally, most of the players (49%) believe that they could take up bowling alongside with another sport.

Table V Descriptive analysis with percentages of the items under the scale “Learning Methods”

QUESTIONS	1 or 2	3	4 or 5
I am learning/have learned bowling by myself	34%	32%	34%
I am learning/have learned bowling individually with a coach	29%	19%	51%
I am learning/have learned bowling individually with friends/fellow athletes	28%	29%	43%
I am learning/have learned bowling through YouTube	51%	26%	22%
I am learning/have learned bowling through social media (Instagram, TikTok)	79%	13%	7%
I am learning/have learned bowling through forums (Quora, Reddit)	84%	13%	3%
I am learning/have learned bowling through bibliography	78%	16%	6%
I am learning/have learned bowling through seminars synchronously	79%	13%	7%
I am learning/have learned bowling through seminars asynchronously	78%	16%	6%
I believe I could take up bowling alongside with another sport	21%	31%	49%

The items with the highest score was the “I am learning/have learned bowling individually with a coach” with a mean of 3.43 (SD=1.5) and the statement “I believe I could take up bowling alongside with another sport” with a mean of 3.4 (SD= 1.24). On the other hand the items with the lowest score are the “I am learning/have learned bowling through forums (Quora, Reddit)” with a mean of 1.51 (SD= .89) and the “I am learning/have learned bowling through seminars asynchronously” with a mean of 1.6 (SD=1.05). The mean value and standard deviation can be found in **Table VI**.

Table VI Descriptive analysis of the items under the scale “Learning Methods”

QUESTIONS	Mean	Std. Deviation
I am learning/have learned bowling by myself	3.01	1.31
I am learning/have learned bowling individually with a coach	3.43	1.5
I am learning/have learned bowling individually with friends/fellow athletes	3.13	1.31
I am learning/have learned bowling through YouTube	2.47	1.34
I am learning/have learned bowling through social media (Instagram, TikTok)	1.72	1.01

I am learning/have learned bowling through forums (Quora, Reddit)	1.51	0.89
I am learning/have learned bowling through bibliography	1.65	1
I am learning/have learned bowling through seminars synchronously	1.69	1.14
I am learning/have learned bowling through seminars asynchronously	1.6	1.05
I believe I could take up bowling alongside with another sport	3.4	1.24

These results demonstrate that learning to bowl was a social experience with minimal technological involvement for our participants. Consequently, the material created in our project will be used complementary to the main training session by the coaches.

3.3.2 Experience with bowling so far

Respondents were asked to fill in a five-point Likert scale their experience with bowling so far. The cost of the bowling equipment seems to be the main reason to stop playing bowling as 38% of the respondents said that they either agree or strongly agree with the statement. Most of the respondents (85%) keep playing bowling as they keep them entertained, using it as an escape from their daily routine (75%).

Table VII Descriptive analysis with percentages of the items under the scale “Experience with bowling”

QUESTIONS	1 or 2	3	4 or 5
I don't have much time to engage with bowling	59%	34%	7%
The cost of engaging with bowling is a deterrent	35%	37%	28%
The cost of the bowling equipment is a deterrent	29%	32%	38%
I would like to continue engaging with bowling because of my friends/ fellow athletes	24%	19%	57%
It's difficult for me to continue the engagement because of my lack of knowledge	85%	9%	6%
It's difficult for me to continue the engagement because of the lack of a coach	75%	18%	7%
I would like to continue my engagement with bowling as it is an escape from my daily routine	10%	15%	75%
I would like to continue my engagement with bowling because it is entertaining	4%	10%	85%
It's difficult for me to continue the engagement because of the lack of development	59%	18%	9%
I'm having trouble finding a place to train	56%	15%	29%

The item with the highest mean is the “I would like to continue my engagement with bowling because it is entertaining” with a mean of 4.34 (SD=.89) and the “I would like to continue my engagement with bowling as it is an escape from my daily routine” with a mean of 4.07 (SD=1.04). The item with the lowest mean is “It’s difficult for me to continue the engagement because of my lack of knowledge” with a mean of 1.62 (SD=.93), followed by the item “It’s difficult for me to continue the engagement because of the lack of a coach” with a mean of 1.82 (SD= 1.02). All the results can be found in **Table VIII**.

Table VIII Descriptive analysis of the items under the scale “Experience with bowling”

QUESTIONS	Mean	Std. Deviation
I don't have much time to engage with bowling	2.24	1.01
The cost of engaging with bowling is a deterrent	2.85	1.1
The cost of the bowling equipment is a deterrent	3.07	1.24
I would like to continue engaging with bowling because of my friends/ fellow athletes	3.53	1.42
It's difficult for me to continue the engagement because of my lack of knowledge	1.62	0.93
It's difficult for me to continue the engagement because of the lack of a coach	1.82	1.02
I would like to continue my engagement with bowling as it is an escape from my daily routine	4.07	1.04
I would like to continue my engagement with bowling because it is entertaining	4.34	0.89
It's difficult for me to continue the engagement because of the lack of development	1.96	1.14
I'm having trouble finding a place to train	2.49	1.44

3.3.3 Setting priorities

Participants are required to prioritize the aspects of bowling that they wish to develop further, ranging from technique to rule knowledge, as the final question. The one they want to develop the most should be put first and the least important should be put seventh.

After calculating the total scores for each choice, we sorted the choices in descending order of total scores to establish the final ranking. The choice with the highest score signified the most important choice, and the choice with the lowest score indicated the least important one. This process allowed us to assign scores to each choice based on the respondents' rankings. The final ranking can be found in **Table IX**.

Table IX Final ranking based on the respondents' answer in “Setting Priorities”

Statements	Score	Ranking
I am interested in learning the rules including how the score is calculated	176	7

I am interested in learning the basic techniques to improve aiming such as Stance, positioning, Push-Away	269	4
I am interested in learning / improving ball release techniques	308	2
I am interested in learning/improving footwork and timing techniques	316	1
I am interested in learning/improving my strikes	264	6
I am interested in learning/improving my spares, including spare system techniques	266	5
I am interested in learning/improving hooking the ball techniques	305	3

The item that interests the most athletes in improving is the “I am interested in learning/improving footwork and timing techniques” with a final score 316 points, followed by “I am interested in learning / improving ball release techniques” with a final score of 308 points and the “I am interested in learning/improving hooking the ball techniques” with a final score of 305 points. The item with the least points (176) is “I am interested in learning the rules including how the score is calculated”. The fact that basic rules are the least interesting to our participants can be explained by the fact that most of them are seasoned players, that play bowling many times per month.

3.4 Analysis of Coaches' bowling experience

Upon affirming their status as bowling coaches in response to the initial query, respondents were granted access to the following sections of the questionnaire. Subsequently, 12.5% of the total sample population confirmed that they are bowling coaches. The analysis that follows in this section will provide numerical values rather than percentages, as there are only nine coaches in total, leaving percentages potentially misleading.

The following question was about their years as bowling coaches. The average value was 9.22 years. The minimum years declared by a user was 2 years and the maximum were 35 years.

3.4.1 Teaching methods

Based on the results found in **Table X**, it can be deduced that most coaches prefer to teach individually (6 people) or in a group (4 people). However, none of them organises seminars to teach. Moreover, they don't use assistive materials such as videos or text.

Table X Numerical values of the items under the scale “Teaching methods”

QUESTIONS	1 or 2	3	4 or 5
I teach bowling individually (one on one)	2	0	6
I teach bowling in a group	3	1	4
I teach bowling using YouTube as a teaching tool	7	1	0

I teach bowling using social media (Instagram, TikTok) as a teaching tool	8	0	0
I teach bowling using forums (Quora, Reddit) as a teaching tool	8	0	0
I teach bowling using bibliography as teaching material	7	0	1
I am organizing synchronous (online/ on the field) seminars	8	0	0
I have taught through self paced courses	5	0	3

The item with the highest mean is the “I teach bowling individually (one on one)” with a mean of 4.22 (SD=1.56) followed by the “I teach bowling in a group” with a mean of 3.44 (SD=1.74). On the other hand, the lowest mean has the item “I teach bowling using forums (Quora, Reddit) as a teaching tool” with a mean of 1 (SD=0), followed by the “I teach bowling using YouTube as a teaching tool” with a mean of 1.33 (SD=.71). The results can be found in **Table XI**.

Table XI Descriptive analysis of the items under the scale “Teaching methods”

QUESTIONS	Mean	Std. Deviation
I teach bowling individually (one on one)	4.22	1.56
I teach bowling in a group	3.44	1.74
I teach bowling using YouTube as a teaching tool	1.33	0.71
I teach bowling using social media (Instagram, TikTok) as a teaching tool	1.33	1
I teach bowling using forums (Quora, Reddit) as a teaching tool	1	0
I teach bowling using bibliography as teaching material	1.78	1.56
I am organizing synchronous (online/ on the field) seminars	1.44	1.33
I have taught through self paced courses	2.89	1.83

3.4.2 Bowling coaching

The participants should vote in a five Likert scale their views on coaching in bowling based on their experiences. It can be easily deducted that the coaches are willing to have a community of practice as 5 out of 9 coaches stated that they either agree or totally agree with the respective statement. Moreover, 6 coaches stated that they would like to have more knowledge on bowling coaching. The results can be found in **Table XII**.

Table XII Numerical values of the items under the scale “Bowling coaching”

QUESTIONS	1 or 2	3	4 or 5
I don't have time to teach new athletes	4	2	2

I would like to have further education/knowledge on bowling coaching	2	0	6
There are no athletes available for me to teach/train	5	2	1
It would be nice if a coach community was created	1	2	5
I find it difficult to find a training space for my athletes	5	1	2
Most athletes quit the sport after a few coaching lessons	5	1	2

The item with the highest mean was the “It would be nice if a coach community was created” with a mean of 3.89 (SD=1.36), followed by the item “I would like to have further education/knowledge on bowling coaching” with a mean of 3.78 (SD = 1.64). However, the items with the lowest mean were the “There are no athletes available for me to teach/train”, with a mean of 2.11 (SD=1.36) and the “I find it difficult to find a training space for my athletes” with a mean of 2.22 (SD=1.72). The results can be found in **Table XII**.

Table XIII Descriptive analysis of the items under the scale “Bowling coaching”

QUESTIONS	Mean	Std. Deviation
I don’t have time to teach new athletes	2.56	1.59
I would like to have further education/knowledge on bowling coaching	3.78	1.64
There are no athletes available for me to teach/train	2.11	1.36
It would be nice if a coach community was created	3.89	1.36
I find it difficult to find a training space for my athletes	2.22	1.72
Most athletes quit the sport after a few coaching lessons	2.33	1.12

3.4.3 Trainees view

The section of the coaches’ bowling experience, continued with five-point Likert scale where the coaches should answer rate statements regarding their trainees. It can be assumed that according to coaches the athletes give up on bowling due to the high cost as 4 out of 9 said that they either agree or totally agree with the statement. Moreover, it is prominent that bowling is a gateway for the athletes from their everyday life and that the community is of high importance.

Table XIV Numerical values of the items under the scale “My athletes/trainees views”

QUESTIONS	1 or 2	3	4 or 5
My trainees don’t have a lot of time to engage with bowling	1	3	4
The cost of engagement is a deterrent for my trainees	2	2	4
The equipment cost is a deterrent for my trainees	2	3	3
My trainees would like to continue playing because of their friends/ fellow athletes	2	1	5

It is difficult for my trainees to continue engagement because of their lack of knowledge	5	2	1
My trainees would like to continue playing bowling because it is an escape from their daily routine	2	1	5
My trainees would like to continue playing bowling because it is entertaining	2	1	5
It is difficult for my trainees to continue engagement because of their lack of development	4	4	0

“My trainees would like to continue playing bowling because it is entertaining” had the highest mean score of 3.56 (SD = 1.33), followed by “My trainees don’t have a lot of time to engage with bowling” with a mean of 3.44 (SD=0.88). On the contrary, the statements “It is difficult for my trainees to continue engagement because of their lack of knowledge” and “It is difficult for my trainees to continue engagement because of their lack of development” had the lowest mean of 1.89 (SD= 1.17 and 1.05, respectively). The resulting values are shown in **Table XV**.

Table XV Descriptive analysis of the items under the scale “My athletes/trainees views”

QUESTIONS	Mean	Std. Deviation
My trainees don’t have a lot of time to engage with bowling	3.44	0.88
The cost of engagement is a deterrent for my trainees	3.11	0.93
The equipment cost is a deterrent for my trainees	3.11	1.17
My trainees would like to continue playing because of their friends/ fellow athletes	3.22	1.09
It is difficult for my trainees to continue engagement because of their lack of knowledge	1.89	1.17
My trainees would like to continue playing bowling because it is an escape from their daily routine	3.22	1.09
My trainees would like to continue playing bowling because it is entertaining	3.56	1.33
It is difficult for my trainees to continue engagement because of their lack of development	1.89	1.05

3.4.4 Setting priorities

Participants are required to prioritize the aspects of bowling that they wish to teach as the final question. The one they want to develop the most should be put first and the least important should be put seventh.

After calculating the total scores for each choice, we sorted the choices in descending order of total scores to establish the final ranking. The choice with the highest score signified the most important choice, and the choice with the lowest score indicated the least important one. This

process allowed us to assign scores to each choice based on the respondents' rankings. The final ranking can be found in **Table XVI**.

Table XVI Final ranking based on the coaches' answers in "Setting Priorities"

Statements	Score	Ranking
It is important to teach the basic rules of the game including playing etiquette	66	3
It is important to teach the basic techniques to improve aiming such as Rules, Stance, positioning, Push-Away	79	1
It is important to teach trainees on ball release techniques	52	5
It is important to teach trainees footwork and timing techniques	76	2
It is important to teach trainees how to improve their striking skills	35	8
It is important to teach trainees on improving spares, including spare system techniques	56	4
It is important to teach trainees hooking ball techniques	43	6
It is important to teach my trainees on building a bowling ball arsenal and to teach which ball is to be used and when	22	10
It is important to educate trainees on physical fitness	28	9
It is important to educate trainees on the mental preparedness.	38	7

The item that interests the most athletes in improving is the "It is important to teach the basic techniques to improve aiming such as Rules, Stance, positioning, Push-Away" with a final score 79 points, followed by "It is important to teach trainees footwork and timing techniques" with a final score of 76 points and the "It is important to teach the basic rules of the game including playing etiquette" with a final score of 66 points. The item with the least points (22) is "It is important to teach my trainees on building a bowling ball arsenal and to teach which ball is to be used and when".

4 Curriculum

Based on the questionnaire results the following course provided is formed.

Course title: The basics of the game

ECTS: 0.3

Mode of delivery²: Asynchronous or Flipped Classroom

Learning outcomes: This course is designed to teach the athletes, mostly beginners, the basic rules of the bowling game. Upon completion, participants will be able to:

- Master the game's basic rules.
- Choose equipment wisely.
- Achieve a proficient ball release.
- Hone footwork and timing.
- Understand ball materials.
- Navigate lanes effectively.
- Tackle spare situations.
- Optimize positioning for accuracy.

General competences: The module focuses on the basic rules, informed equipment choices, proficient ball release, improved footwork and timing, a sound understanding of ball materials, and effective lane navigation. Additionally, it enhances spare-handling skills and strategic positioning to empower participants in their bowling journey.

Course organization and content (syllabus): Emphasis in the course is on the basic rules of the bowling game and will cover topics such as:

1. Introduction
 - a. Basic equipment
 - b. Lane – Positioning (Approach)
 - c. Rules
2. Ball release (Swing)
 - a. Four – Step Delivery
 - b. Swing
 - c. Push Away (Approach to the Target)
3. Footwork and Timing techniques (Basic Drills)
 - a. One-Step Approach
 - b. Two-Step Approach
 - c. Three-Step Approach
4. Getting to know the materials.
 - a. Balls
 - b. Cores
 - c. Materials – Resins

² e.g. synchronous, asynchronous, gamified, blended, etc.

- d. Surfaces and friction
- 5. Steps
 - a. Directions
 - b. Distances
 - c. Personal Number
- 6. Spare
 - a. Position
 - b. Direction

Keywords: Bowling fundamentals, Rules and equipment, Ball release, Swing technique, Footwork and timing, Lane navigation, Spare, Positioning strategy, Bowling materials

Education material types:

- PowerPoint
- Annotated Images
- Videos
- Tests

ICT use³: Learning Management System

Student assessment description and methods: Quizzes- multiple choice

Bibliography: TBD

³ Use of Information and Communication Technologies (expected digital services support, e.g. e-content, assessment, etc.)

5 Policies, roles, rights and flows of information

The term "Communities of Practice - CoP" was developed around 20 years ago. For many centuries informal Communities of Practice (CoP) consisted of people who had a common interest and formed informal groups where they could share knowledge, learn about each other's practices, and come-up with innovative ways of dealing with problems (Wenger, 2002). According to Wegner et al (2002), communities of practice represent "groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly".

The guiding principle of a CoP is that learning is not necessarily a top-down process, with knowledge flowing from an expert (e.g., teacher) to recipients without prior knowledge on the subject matter (i.e., pupils; students; trainees). Rather, learning is "situated", and the "situated learning" approach suggests that knowledge flows are bidirectional, and knowledge is shaped and used dynamically as the members of a learning community share ideas and practices relevant to the subject matter they're interested in (Wenger, 2011).

5.1 Aims and Objectives of STAYinBowling CoP

So far, much of European and other funding has been allocated to the creation of new knowledge in protecting athletes, especially the youngest, from health and safety hazards by improving training and competition conditions. However, there has been disproportionately less consideration of effective ways to manage and sustain this knowledge in ways that will maximize the usability and impact of existing bowling education initiatives, and lead to the development of new ones. Recognizing the need to deliver a cost-effective and self-sustained knowledge management process, the project will develop, for the first time virtual (online) Communities of Practice for bowling of athletes across Europe.

Through a strategic partnership with key academic experts who possess a large intellectual capital on developing and evaluating bowling education, and international and national stakeholders and key actors from the world of sports (sport associations; universities; ministries), project STAYinBowling developed the knowledge management context that is needed in order to transform existing bowling educational resources into meaningful, relevant, timely, impactful and sustainable tools, and to stimulate the generation of new and innovative bowling educational solutions.

5.2 Innovative aspects of STAYinBowling CoP

Our community is the first ever formal community of practice for BOWLING. Although there have been efforts to develop synergies between expert academics and sports organizations/association, STAYinBowling represents the first project to ever develop a formal community of practice for bowling.

Moreover, we are creating a knowledge "hub" for sustainable, timely, and relevant bowling educational practice. The core function of project STAYinBowling was to gather, store, integrate and re-use knowledge about bowling in new ways and/or in new contexts. Importantly, project STAYinBowling will significantly help sport stakeholders and organizations involved in bowling to identify and re-frame/replace obsolete "business-as-usual" educational practices and policies with more timely ones that reflect the needs of the target populations (e.g., athletes, coaches).

Finally, we will apply state-of-art learning technologies applied in STAYinBowling Community of Practice. Rather than relying on unplanned, informal communities of practice, project STAYinBowling developed a formal, systematic, and results oriented community of practice with

a vested interest in stimulating the development of new, best practices in bowling education in Europe. For this reason, STAYinBowling represents the first project of its kind to utilize state-of-art technology to support the development, function, and evolution of the first virtual community for bowling education in the world.

6 References⁴

Wenger, E., McDermott, R., & Snyder, W. M. (2002). *Cultivating communities of practice* (Boston, MA, Harvard Business School Press). Williams, R., Brien, K, Sprague, C., & Sullivan, G.(2008). *Professional learning communities: Developing a school-level readiness instrument*. *Canadian Journal of Administration and Policy*, 74(6).

Wenger, E., Trayner, B., & De Laat, M. (2011). Promoting and assessing value creation in communities and networks: A conceptual framework.

⁴ Please use APA style for the references <https://owl.english.purdue.edu/owl/resource/560/1/>

7 Annex: STAYinBowling Questionnaire

The questionnaire can be found in its electronic form in the following link <http://titan.csd.auth.gr/surveys/index.php?sid=57698&newtest=Y&lang=en>.

It can also be printed using the following file (note: please double click to open the embedded file).



Final_Questionnaire.pdf