Journal of Multidisciplinary Healthcare

Dovepress
open access to scientific and medical research

Open Access Full Text Article

ORIGINAL RESEARCH

ACTIVE PREGNANCY: Workshop on Promotion of Physical Activity in Pregnancy for Exercise Professionals

Rita Santos-Rocha[1,2], Simona Pajaujiene[3], Anna Szumilewicz[4]

[1]Department of Physical Activity and Health, Sport Sciences School of Rio Maior (ESDRM), Polytechnic Institute of Santarém (IPSANTAREM), Rio Maior, Portugal; [2]Interdisciplinary Centre for the Study of Human Performance (CIPER), Faculty of Human Kinetics (FMH), University of Lisbon, Cruz Quebrada, Portugal; [3]Department of Coaching Science, Lituanian Sport University, Kaunas, Lithuania; [4]Department of Fitness, Faculty of Physical Culture, Gdansk University of Physical Education and Sport, Gdansk, Poland

Correspondence: Rita Santos-Rocha, Email ritasantosrocha@esdrm.ipsantarem.pt

Introduction: A one-day workshop on promotion of physical activity in pregnancy for exercise professionals was delivered during 2021, to 137 participants. The main aim of this workshop was to motivate and prepare exercise professionals for promoting physical activity and implementing prenatal exercise programs, in their respective private or public fitness centers or other physical activity settings.

Methods: The contents of the workshop were focused on six topics based on the "Pregnancy and Postpartum Exercise Specialist" educational standards by EuropeActive and the "Exercise and Physical Activity during Pregnancy and Postpartum" textbook published by Springer. Participants provided feedback on the effectiveness and satisfaction with the workshop.

Results: Overall evaluations from the feedback forms showed that majority of the participants agreed that the workshop achieved its objectives with a major recommendation as to the organization of more short duration workshops, the inclusion of practical sessions, and the separation of the contents addressing the postpartum period.

Discussion: The workshop on promotion of physical activity in pregnancy for exercise professionals was successfully organized and the participants are looking forward for future ones.

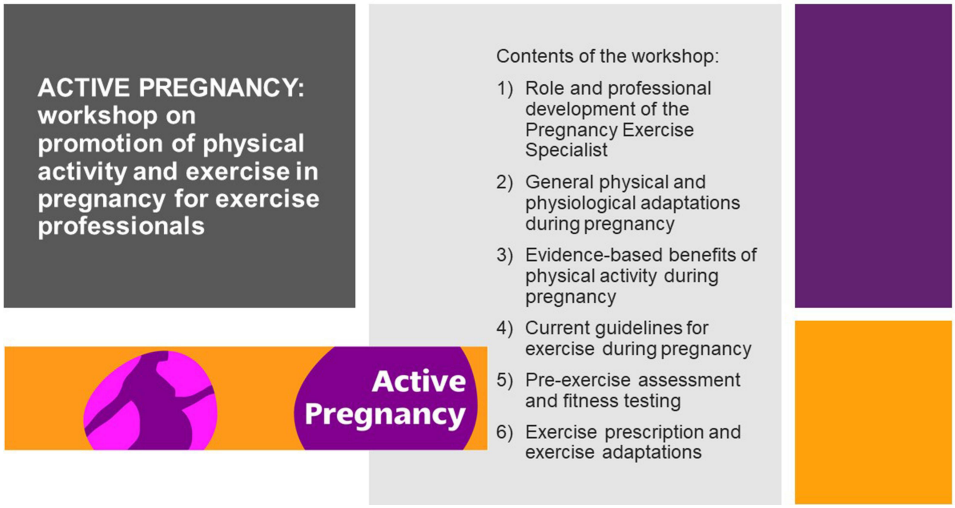
Keywords: workshop, exercise professionals, educational standards, pregnancy, postpartum

Background

The World Health Organization (WHO) recommends that "women who, before pregnancy, habitually engaged in vigorous-intensity aerobic activity or who were physically active, can continue these activities during pregnancy and the postpartum period".[1] The last three decades produced an increasing amount of scientific evidence on the positive effects of the prenatal physical activity on the maternal and fetal health, as well as in pregnancy outcomes, as shown by recent systematic reviews.[2–18] Practice guidelines have become an increasingly popular tool for synthesis of clinical information.[19] Clinical guidelines are commonly defined as systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific clinical circumstances, which objectives are to enhance appropriateness of practice, improve quality of care, lead to better patient outcomes, improve cost effectiveness, help authorities to decide on the approval of drugs and devices, and identify areas of research needed.[20] A profusion of guidelines has been issued over the past 6 years by different national and international obstetrics, gynecology, or sports medicine organizations, which are a trustworthy and comprehensive source of information in terms of safety and health benefits of exercise during pregnancy. Several official guidelines on physical activity during pregnancy have been updated recently.[1,21–29] Most of these guidelines were reviewed by other authors[30] and in our textbook.[31] Moreover, other organizations published these guidelines in a more accessible language to reach pregnant women.[32–35] Yet, the physical inactivity epidemic is considered the biggest public health problem of the 21st century.[36,37]

Received: 13 May 2022
Accepted: 14 July 2022
Published: 14 September 2022

Graphical Abstract



Challenges for practicing physical activity during pregnancy are numerous and include lack of knowledge about existing recommendations, unawareness of how to engage in physical activity, lack of social support, and unavailability of physical activity offers.[38] Despite the above stated scientific evidence, health professionals often lack either knowledge of existing recommendations and pregnancy-related benefits or resources to adequately address the topic.[39,40] Among health professionals, midwifes are ideally placed to promote physical activity during pregnancy consultations as part of a wider network of practitioners.[40,41] After the assessment of potential contraindications for exercising, health-care providers should provide counseling on an active lifestyle and refer pregnant women to a qualified exercise professional (ie, exercise physiologist or prenatal exercise specialist), with a background and experience in pregnancy and/or postpartum physical activity and/or exercise.[42] Interprofessional settings (including health-care providers and exercise experts) can help to reach fitness goals, tailor exercises according to abilities and - most importantly - minimize the risk of injury. Therefore, interprofessional collaboration is essential.[43]

When exercising during pregnancy, women need to feel safe and professionally guided to ensure proper technique, confidence, and appropriate progression of intensity and complexity.[44] The exercise professional should provide proper exercise prescription and selection, along with regular feedback, positive reinforcement, and behavioral strategies to enhance adherence.[45,46]

The American College of Sports Medicine (ACSM)[32,33] recommends that physical activity programs should be individualized for each woman based on situation, experience, and current health status. Exercise professionals can notably support aerobic training, strength training, flexibility, balance, pelvic floor muscle training, during pregnancy and postpartum.[32,33,45,46] The National Health Services (NHS) guidelines[34] advise pregnant women to make sure that exercise professionals are properly qualified and informed about their pregnancy status. The Sports Medicine Australia (SMA) guidelines[21] advise pregnant women to ask for a medical doctor's recommendation to consult exercise specialists in view of an individually prescribed exercise program including appropriate types of activities and ways to progress at a safe and steady pace. The Canadian guidelines[24] and the Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG) guidelines[26] highlight fitness professionals and exercise physiologists as target users of their evidence-based guidelines in view of maternal, fetal, and neonatal health outcomes of prenatal physical activity. The Physical Activity Guidelines for Americans[23] state that physical activity specialists can encourage to attain and maintain regular physical activity by providing advice on adapted activities and ways to progress at a safe and steady pace, even for individuals with chronic conditions. These statements included in the official position documents highlight the

increasing importance of the exercise professional in promoting and implementing adapted effective and safe exercise programs.

In 2016, EuropeActive published the role and standards of the Pregnancy and Postnatal Exercise Specialist, based on the European Qualification Framework.[47] According to this professional educational standard, the role of the prenatal exercise specialist is to encourage exercise participation for beginners and already active women at all stages of pregnancy and during the postpartum period[47] including the assessment of overall physical fitness, the development of adapted exercise programs, providing feedback on progress, adherence, and outcomes to relevant stakeholders.

The lack of information among women on the exercises during pregnancy, and lack of social support are two of the reasons hindering engagement in a prenatal exercise program.[38] However, pregnancy may provide a "teachable moment" for positive health behaviour change,[48] and a positive relationship was observed between the mothers' knowledge about physical activity during pregnancy and their daily physical activity.[49] Thus, promoting the guidelines and educational materials providing information about physical activity during pregnancy is expected to help pregnant women to engage in proper exercise programs.[48,50]

To sum up, the knowledge of health benefits is expected to lead to more favorable attitudes towards exercise during pregnancy, among pregnant women, exercise professionals and health-care providers.

With this background, a one-day workshop on promotion of physical activity in pregnancy for exercise professionals was planned and facilitated by an Associate Professor, coordinator of the master's in sciences program in Physical Activity and Health, of the Sport Sciences School of Rio Maior (ESDRM), Polytechnic Institute of Santarém, Portugal. The workshop was delivered at the ESDRM and in partnership with other higher schools of the Polytechnic Institutes of Beja and Leiria, Portugal, during 2021, to five groups of exercise professionals.

The main aim of this workshop was to motivate and prepare exercise professionals for promoting physical activity and implementing prenatal exercise programs, in their respective professional fitness center, or in remote settings, in personal training, or group exercise sessions.

The contents of the workshop were focused on six topics: 1) Role and professional development of the Pregnancy Exercise Specialist; 2) General physical and physiological adaptations during pregnancy; 3) Evidence-based benefits of physical activity during pregnancy; 4) Current guidelines for exercise during pregnancy; 5) Pre-exercise assessment and fitness testing; and 6) Exercise prescription and exercise adaptations, based on the "Pregnancy and Postpartum Exercise Specialist" educational standards by EuropeActive[47] and on the "Exercise and Physical Activity during Pregnancy and Postpartum" textbook published by Springer.[51,52]

The following sections will mainly be structured as the report of the workshop event.

Ethical Considerations

Exercise professionals attending advanced higher education programs were invited to participate in the workshop, free of charge. Participants were informed about the objectives and nature of the study, the potential benefits for future programs, that they were free to provide feedback or not, without any consequences, and that the feedback was anonymous. All participants (N = 137) were informed and agreed with the participation in the online questionnaires. Informed consent was checked upon responding to an online questionnaire. All educational materials produced by the research team were made available to the participants, free of charge. The study was conducted in accordance with the Helsinki Declaration. This study is part of the study protocol that was approved by the Ethics Committee of the Polytechnic Institute of Santarém, Portugal (approval number 9-2021-ESDRM).

Report

Objectives of the Workshop

The objectives of the workshop were:

1. to update participants on the importance and evidence-based knowledge underlying physical activity during pregnancy

2. to motivate participants for promoting physical activity among pregnant women
3. to discuss the current guidelines on physical activity during pregnancy
4. to prepare participants for implementing prenatal exercise programs
5. to motivate participants for applied multidisciplinary research

Setting

The workshop was delivered in three Portuguese cities (Rio Maior, Beja and Leiria), at the facilities of the higher schools of sports and education of the respective public polytechnic institutes, and online, during 2021, to five groups of exercise professionals. Three workshops were delivered presently, and two workshops were delivered online by means of the zoom platform. The interactive teaching-learning methods were utilized in all sessions of the workshop.

Facilitator

The workshop was facilitated by an Associate Professor, which is the first author of this article, and it was conducted in the Portuguese language. The facilitator academic background includes a BSc in sport sciences, a MSc in exercise and health, a PhD in health and fitness, as well as professional background as exercise physiologist and fitness instructor. Each event was inaugurated by the program coordinator of each of the higher schools where it was delivered.

Participants

Between 23 and 42 persons (61% female) participated in each workshop, totaling 137 attendees including graduated exercise professionals, third year exercise science students, and master students, with 1 to 10 years of professional experience in conducting exercise classes and personal training. Only 30% of the attendees had professional experience in conducting classes for pregnant women. The academic background of all participants was a bachelor's degree in exercise and sport sciences. The ages of the attendees varied from 21 to 55 years.

Contents

The contents of the workshop were inspired by the EuropeActive's official document educational standard for the prenatal exercise specialist[47] that the three authors of this article produced in 2016, and on the chapters developed in the textbook "Exercise and Physical Activity during Pregnancy and Postpartum" textbook published by Springer in 2019,[51] and the second edition in 2022.[52]

The contents of the workshop were focused on the following six topics, delivered in 3h plus 3 hours (about one hour for each topic). The key points of each content are described as follows:

Role and Professional Development of the Pregnancy Exercise Specialist

Participants were motivated for promoting physical activity, by understanding their role and the barriers and facilitators for exercising during pregnancy. Main points were: The medical and social need for Pregnancy Exercise Specialists (regarding the national laws, in this case, the Portuguese Law nr. 39/2012 of 28-08-2012); The place of the Pregnancy Exercise Specialists in the healthcare system and the cooperation of a multidisciplinary task force of health-care professionals (Obstetrician/Gynecologist, Midwife, Nutritionist, Exercise Physiologist, Exercise Psychologist, Physiotherapist); Specific evidence-based sources related to the benefits of exercise for pregnant women; National legislation, policies and guidance relating to the provision of exercise services to pregnant women; Ethical issues regarding working with pregnant women. Main references for this content: educational standard for the prenatal exercise specialist,[47] chapter,[43] and national Law nr. 39/2012 of 28-08-2012.

General Physical and Physiological Adaptations During Pregnancy

The main points were to describe the pregnancy-related symptoms and the body adaptations to pregnancy and to physical exercise, which require supervision of technique, adaptations of exercises, and safety considerations: The risk factors and prevalence of discomforts and health conditions associated with pregnancy and postpartum (eg, gestational diabetes, overweight, obesity, edema, low back pain, hypertension, pre-eclampsia, musculoskeletal disorders, diastasis recti abdominis,

stress urinary and fecal incontinence and other pelvic-floor disorders, stress and anxiety, oral health, sleep disorders, headache, digestive disorders, etc.); Interactive effects of morphological, physiological and hormonal adaptations to pregnancy phases, and to exercise (eg, adaptation of cardiovascular and thermoregulation systems, metabolic changes); Musculoskeletal changes and biomechanical adaptations of posture and gait in pregnancy; Psychosocial adaptations to pregnancy and the main barriers to participation in exercise. Main references for this content: chapters.[38,53–56]

Evidence-Based Benefits of Physical Activity During Pregnancy

The main points were to search the recent systematic reviews that support the positive impact of physical activity in the maternal health and fitness parameters, and how to utilize research outcomes when promoting physical activity and planning exercise programs. Participants were updated on the importance and evidence-based knowledge underlying physical activity during pregnancy, and were motivated for multidisciplinary research: The improved sense of well-being and enhanced quality of life as an effect of regular exercise during pregnancy; The acute and long-term effects of exercise in pregnant women and babies, related to all fitness and well-being parameters (eg, cardiovascular, muscular strength and endurance, flexibility, neuromotor, posture, body composition, mental health); The effect of exercise on increased energy expenditure (eg, excess post-exercise oxygen consumption, increased fat loss, preservation of lean body mass, increased metabolic rate, prevention of overweight and obesity in mother and child); The association of exercise with fertility, fetal development, birth outcomes and infant health; The preventative role of exercise in relation to any potential future cardiac health risk related to chronic disease; The preventative role of exercise in relation to gestational diabetes and diabetes mellitus type 2 (eg, lower blood glucose concentration during and after exercise, improved insulin sensitivity and decreased insulin requirement, lower glycated hemoglobin levels); The preventative role of exercise in relation to dyslipidemia (eg, decreased triglycerides, slightly decreased low-density lipoprotein, increased high-density lipoprotein); The preventative role of exercise in relation to hypertension and pre-eclampsia (eg, improvement in mild to moderate blood pressure); The preventative role of exercise in relation to the most prevalent musculoskeletal disorders (eg, low or upper back pain, pelvic floor disorders, osteoporosis and poor posture); The potentially preventative role of exercise in relation to other specific conditions of pregnancy and postpartum (eg, macrosomia, diastasis recti, pelvic girdle pain, postpartum weight retention, coronary heart disease prevention postpartum, etc.). Main references for this content: systematic review studies.[2–18]

Current Guidelines for Exercise During Pregnancy

The main points were to address and discuss the official position documents of the leading international organizations regarding physical activity and exercise during pregnancy and postpartum, published since 2018 (eg, WHO, US Department of Health and Human Services, UK Department of Health and Social Care, ACOG - American College of Obstetricians and Gynecologists, RANZCOG, CSEP - Canadian Society for Exercise Physiology, ACSM, etc.): Main guidelines for exercise during pregnancy included in the official statements and evidence-based guidelines for exercising during pregnancy and postpartum; Absolute and relative contraindications for exercising during pregnancy and post-partum; Reasons to stop exercising in pregnant and postpartum women; Sports and physical activities to avoid for pregnant and postpartum women; Safety and emergency procedures during a training session for pregnant and post-partum participants. Main references for this content: guidelines[1,21–29,32–35] and chapter.[31]

Pre-Exercise Assessment and Fitness Testing

The main points were to prepare participants for planning prenatal exercise programs by starting with basic assessment tools based on questionnaires of perception of health and readiness for exercising, weekly volume of physical activity, and perception of fitness and quality of life. Basic aspects and importance of fitness testing with pregnant women were addressed: Interviewing of pregnant and postpartum women and building rapport, taking into consideration the medical clearance for exercise; Preliminary screening tools, such as: the PAR-Q+ questionnaire; the new Get Active Questionnaire for Pregnancy (previously the PARMED-X for pregnancy questionnaire), to assess safety or possible contraindications to exercise; Physical activity and lifestyle assessment (eg, pedometers, accelerometers, and/or questionnaires such as the 7-day PAR - 7-day Physical Activity Recall interview and the PPAQ - Pregnancy Physical Activity Questionnaire); Safety considerations in exercise testing for pregnant women; Assessment of the pregnant women's body composition (eg, body circumferences, body fat distribution markers and other body indexes), heart rate and blood pressure, during rest and exercise; Cardiorespiratory

tests (eg, Astrand, Rockport, 6 minutes walking test, Balke and Bruce tests using a treadmill or cycle ergometer); Static and dynamic tests to assess posture, functionality and overall autonomy in pregnant women. Main references for this content: chapter[45] and ACSM textbook.[57]

Exercise Prescription and Exercise Adaptations

The main points were to prepare participants for implementing prenatal exercise programs by following the steps of an exercise prescription plan and workout features which requires adaptations to each trimester of pregnancy. Motivational techniques for starting exercise or keeping adherence to exercise (eg, diary of behavior, active listening and communication, motivational interviewing, giving feedback on fitness tests, available educational resources, etc.); Motivational techniques to be used during exercise sessions (cuing, voice modulation, stressing the goals of exercises, feedback on exercise performance); Prescription of an exercise program (type of exercise, intensity of exercise, duration of the sessions, weekly frequency of sessions) relevant to pregnant women, their goals, medical history and exercise environment; Selection of exercises and their techniques with regard to women's well-being, functional readiness and the course of pregnancy, in particular the appearance of pregnancy discomforts (eg, back pain, stress urinary incontinence); The structure of the exercise session; The most recommended forms of exercise (eg, walking, low-impact aerobics/step exercise, water exercise, swimming, indoor cycling, strength training, pelvic-floor training, stretching); Adaptation of the so-called risky sports (eg, skiing, skating, cycling, running, etc.); Exercise equipment (eg, fitballs, step, barbells, bands); Monitoring, control and evaluation of all parameters of the exercise program (type, intensity, frequency and duration), and their adaptation to women's condition and stage of pregnancy; Portable equipment controlling the parameters of the exercise session (eg, heart rate monitor); Reports on the outcomes of an exercise program (including charts, notes and diagrams) to enhance their readability to the client and other health professionals. Main references for this content: chapters[45,46] and ACSM textbook.[57]

Educational Materials

Several educational materials were pointed and/or delivered, as follows:

- Active Pregnancy Workshop (PowerPoint presentation) [unpublished material]
- Active Pregnancy Project (PowerPoint presentation) [unpublished material]
- Systematic reviews studies[2–18]
- Official recommendations on physical activity during pregnancy and postpartum[1,21–29,32–35]
- Other studies referenced in the presentation, upon request
- Chapters developed in the textbook "Exercise and Physical Activity during Pregnancy and Postpartum", published by Springer in 2019,[51] and the second edition in 2022.[52] To be noted that this is the unique international book addressing this topic, so far.
- Textbook "ACSM's Guidelines for Exercise Testing and Prescription", 11th edition[57]
- YouTube channel Active Pregnancy[58] including four lists of videos divided into webinars, workshops, workouts, and wikipicks, designed to promote exercise among pregnant women, and to help exercise professionals in planning exercise programs: https://www.youtube.com/channel/UC0Vyookwc0mcQ5T70imtoNA
- Original educational materials published in the Portuguese language supported by IPDJ - Portuguese Institute of Sport and Youth[59–63]

Feedback on the Workshop

The feedback of the participants was taken on semi-structured feedback format in order to evaluate effectiveness of the workshop, the satisfaction with the contents, as well as the venue of the event. Thus, an anonymous feedback questionnaire was provided to each participant in google forms, immediately after of the completion of the workshop. The overall response rates from the total number of attendees (in place groups = 74, online groups = 63, total attendees = 137) was 94.1% (in place groups = 67, online groups = 62, total respondents n = 129).

The questions and the descriptive analysis of the feedback answers were rated by means of a Likert scale 1–5 (5 = excellent, 4 = very good, 3 = good, 2 = poor, 1 = very poor), as shown in Table 1.

Thus, most of the attendees responded that the objectives of the workshop were obtained, the contents are useful for professional practice, the venue (either school or online) is adequate, the experience of the speaker, the time management and the educational resources are excellent. The best features of the workshop were the contents, speaker, time management and educational resources. Overall, the attendees were enthusiastic about the quality of the workshop, either in person or online, and the topics addressed.

Dissatisfaction About the Workshop

The dissatisfaction about the workshop was obtained by means of an open-ended question format. The categories included in dissatisfaction about the workshop provided by the attendees were: the short length of the workshop (17.1%), lack of practical sessions (14.7%), fewer interactions/group discussions during the workshops (14%), lack of specific fitness tests and health questionnaires for pregnancy (7%).

Recommendations for Improving Forthcoming Workshops

The various recommendations were obtained for improving future workshops, but only 27 attendees provided feedback. The aim of obtaining the recommendations was to understand the participants' opinion about future workshops, particularly regarding the organization, the content and objectives of workshop and educational resources (ie, books and YouTube channel).

The answers to the open-ended question format were reported as follows:

- Organization of more in-person short duration workshops (44.2%)
- Organization of practical sessions (41.8%)
- Organization of more online short duration workshops (38.8%)
- Separation and further development of the contents addressing the postpartum period (33.3%)
- Organization of workshops with round table discussion (19.4%)
- Importance of this kind of workshops organized by a higher education school (19.4%)
- Importance of the accreditation of this workshop as a long-life learning training (14.7%)
- Further development of the free access educational resources (17.7%)
- More time dedicated to fitness assessment procedures (7%)
- More time dedicated to motivational counselling techniques (7%)
- More time dedicated to research procedures regarding the dissertation projects in progress (7%)
- Inclusion of contents dedicated to nutrition during pregnancy (2.3%)

The main recommendations and demands were the organization of more short duration workshops with round table discussion, the inclusion of practical sessions, and the separation of the contents addressing the postpartum period.

Table 1 Opinions of the Participants on the Quality and Effectiveness of the Workshop

	Excellent	Very Good	Good	Poor	Very Poor
The workshop achieved its objectives (to gain adequate knowledge and information):	91.5%	8.5%	0%	0%	0%
The contents are useful for professional practice:	93%	7%	0%	0%	0%
The venue (school or online) is adequate:	83.7%	14%	2.3%	0%	0%
Experience of the speaker:	93%	7%	0%	0%	0%
Time management (6 hours):	75.2%	17.8%	7%	0%	0%
Educational resources supporting the workshop (YouTube channel and e-books):	96.1%	3.9%	0%	0%	0%

Discussion

The present workshop on promotion of physical activity in pregnancy for exercise professionals was delivered to 137 exercise professionals with similar academic background (ie, graduated exercise professionals with bachelor's degree in exercise sciences, third year exercise sciences students, and master in exercise sciences students) in the context of a higher education institution. The main aim of this workshop was to motivate and prepare exercise professionals for promoting physical activity and implementing prenatal exercise programs, in their respective private or public fitness centers or in other physical activity settings.

The contents of the workshop were focused on six topics based on the "Pregnancy and postpartum exercise specialist" educational standards by EuropeActive[47] and the "Exercise and Physical Activity during Pregnancy and Postpartum" textbook published by Springer.[51,52]

The most important finding of this work is that the participants rated the content of the training and the achievement of the educational goals very highly. Therefore, the authors believe the knowledge gained could be beneficial for the participants in the future, regarding the promotion of evidence-based knowledge underlying physical activity during pregnancy, the preparation for implementing prenatal exercise programs, and the motivation for applied multidisciplinary research. However, future studies should include knowledge and skill testing, before and after the training, in order to understand how it can improve knowledge and impact practice.

Conducting such workshops is particularly important because exercise professionals play a key role in maintaining an appropriate level and quality of physical activity during pregnancy. In nine guidelines recently published by credible obstetrics, gynecology, or sports medicine institutions, experts recommend pregnant women consult with a physical activity or exercise specialist, or exercise physiologist.[1,21–26] This means that this professional group must be well educated and ready to cooperate both with women in the perinatal period and with obstetric care providers.[42] Unfortunately, in our survey conducted a few years ago we have shown,[64] that although the future exercise professionals are generally aware of the positive impact of prenatal physical activity, they lack detailed knowledge, allowing the implementation of exercise sessions with pregnant clients.

The regular organization of training workshops in this topic is also justified by the fact that in recent years there has been a dynamic increase in scientific evidence about the effectiveness of physical activity during pregnancy and after childbirth. As a result, trends in pre- and postnatal classes are also changing. One example of such a shift is high-intensity interval training (HIIT), which is gaining popularity in a wide variety of populations, including pregnant women.[65] As shown by Nagpal et al,[66] publicly available sources of information on how to implement HIIT in pregnancy are inconsistent and not evidence-based, which can lead to uncertainty in women and discourage them from continuing their favorite form of exercise. Another example of a significant change in the approach to exercise during pregnancy in some countries is the emphasis on the responsibility of the pregnant woman for her own health and that of the child.[67] In Canada, women are encouraged to self-assess their health, pregnancy, and readiness to exercise, eg, based on the Get Active Questionnaire for Pregnancy (GAQ-P).[68] Thanks to this, they do not need a doctor's approval to participate in the prenatal classes. Short workshops on the new trends and tools allow exercise professionals to quickly update their knowledge and skills. The overall workshop evaluations also showed that most of the participants were satisfied with the venue and the speaker with a major recommendation as to the organization of more short duration workshops and the inclusion of practical sessions. However, few complained about the length of the workshop (ie, two sessions of 3 hours, totaling 6 hours), demanding for more workshops in near future with more group discussion and longer duration. These different opinions of participants indicate the need to properly balance the length of training and the volume of educational content. In 2021, our response to this need was the start of the work on updating the EuropeActive's "Pregnancy and Postpartum Exercise Specialist Standards".[69,70] After careful analysis and based on a global external consultation process, in the new document we have left only those professional competences that are most needed on the labor market to work effectively and safely with pregnant and postpartum woman. This makes the knowledge and skills related to planning and conducting exercise programs for pregnant and postpartum women much more accessible to exercise professionals in less time. Although the training based on these standards should be shorter, we paid a lot of attention to practical competences.

Despite the fact that most participants were graduate exercise professionals, they demanded the organization of more workshops, either in-person or online, including practical sessions, for instances, in two days or 4 slots of 3 hours, balancing theory and practical approaches. Moreover, there is the need to upskill exercise professionals, to work as part of a wider network of professionals (eg, doctors, midwives, physiotherapists, etc.), delivering the same messages, in order to maximize the benefits to pregnant and postpartum women.[71,72] These opinions were inspiration to develop an international online workshop – The NEPPE "The New Era of Pre- and Postnatal Exercise" project, supported by the Polish National Academic Exchange Agency (NAWA).[73]

One-third of the participants recommended the separation of the contents addressing the exercise prescription and adaptations during the pregnancy and postpartum periods. Moreover, participants are aware that, from the perspective of exercise planning and intervention, pregnant and postpartum women are two different populations, which require different skills and expertise from exercise professionals. These opinions were inspiration to develop two separate educational modules in the new EuropeActive's standards: "Exercise in Pregnancy" and "Exercise in Postpartum". Based on our experience and observation from this workshop, the training providers should plan a separate time for the educational process aimed at achieving learning outcomes defined for these two modules. These opinions were also an inspiration to develop a new chapter on exercise prescription and selection during the early postpartum period.[74]

Almost 15% of the participants underlined the importance of the accreditation of this workshop as a lifelong learning (LLL) training. The issue of the recognition of LLL activities undertaken by the exercise professionals has been raised recently by EuropeActive experts.[75] From the learner's perspective it will contribute to professional competitiveness. Moreover, such a system will address skills shortages in the labor market and support the overall professionalization of the sector. It is also in accordance with the Council Recommendation on the European Qualifications Framework for lifelong learning.[76] However, in order to enable the recognition of LLL and the accreditation of training workshops, it is necessary to develop appropriate education quality standards. One of the solutions to make the workshops accreditation process more transparent and the educational and vocational programs more comparable, is the use of educational credits. Therefore, in the updated version of the "Pregnancy and Postpartum Exercise" educational standards we decided to use European credit system for vocational education and training (ECVET)[77] and the European Credit Transfer and Accumulation System (ECTS).[78] We assume it will also facilitate the transferability of the educational modules or individual learning units between vocational education and training (VET) and higher education (HE) systems.[79]

Conclusion

In conclusion, the workshop on promotion of physical activity in pregnancy for exercise professionals was successfully organized, either in person or online, and the participants are looking forward to future workshops. Most of the workshop attendees were convinced that the participation improved their level of knowledge. Moreover, the feedback gathered during the workshop significantly contributed to updating the European educational standards for Pregnancy and Postpartum Exercise Specialists and the commencement of work on the lifelong learning offer for exercise professionals. Therefore, the updating and improvement of knowledge about the importance of physical activity in pregnancy may be translated into a more effective cooperation between exercise professionals and pregnant women in terms of planning and implementing exercise programs.

Summary

A one-day workshop on promotion of physical activity in pregnancy for exercise professionals was delivered during 2021. The main aim was to motivate and prepare exercise professionals for promoting physical activity and implementing prenatal exercise programs. The contents of the workshop were focused on six topics based on the "Pregnancy and Postpartum Exercise Specialist" educational standards by EuropeActive and the "Exercise and Physical Activity during Pregnancy and Postpartum" textbook published by Springer. The workshop was successfully organized, and the participants are looking forward for future ones.

Acknowledgments

IPDJ – Instituto Português do Desporto e da Juventude (Portuguese Institute of Sport and Youth) for the support in the production of the educational materials. EuropeActive for the support in the production of the educational standards.

Funding

The APC of this article was funded by CCISP (Portugal) – HES-SO (Switzerland) collaborative research: ACTIVE PREGNANCY - PROMOTING PHYSICAL EXERCISE AND A HEALTHY LIFESTYLE DURING PREGNANCY AND POSTPARTUM. IPSANTARÉM - Polytechnic Institute of Santarém, Portugal: ESDRM – Sport Sciences School of Rio Maior; ESSS – Health School of Santarém; ESAS – Agrarian School of Santarém, and University of Applied Sciences and Arts Western Switzerland (HES-SO) - School of Health Sciences, Lausanne (HESAV).

Disclosure

The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.

References

1. Bull FC, Al-Ansari SS, Biddle S, et al. World Health Organization 2020 guidelines on physical activity and sedentary behavior. *Br J Sports Med*. 2020;54:1451–1462. doi:10.1136/bjsports-2020-102955
2. Nascimento SL, Surita FG, Cecatti JG. Physical exercise during pregnancy: a systematic review. *Curr Opin Obstet Gynecol*. 2012;24(6):387–394. doi:10.1097/GCO.0b013e328359f131
3. Mørkved S, Bø K. Effect of pelvic floor muscle training during pregnancy and after childbirth on prevention and treatment of urinary incontinence: a systematic review. *Br J Sports Med*. 2014;48(4):299–310. doi:10.1136/bjsports-2012-091758
4. Jorge C, Santos-Rocha R, Bento T. Can group exercise programs improve health outcomes in pregnant women? A systematic review. *Curr Womens Health Rev*. 2015;11(1):75–87.
5. Perales M, Santos-Lozano A, Ruiz JR, Lucia A, Barakat R. Benefits of aerobic or resistance training during pregnancy on maternal health and perinatal outcomes: a systematic review. *Early Hum Dev*. 2016;94:43–48. doi:10.1016/j.earlhumdev.2016.01.004
6. Bgeginski R, Ribeiro PAB, Mottola MF, Ramos JGL. Effects of weekly supervised exercise or physical activity counseling on fasting blood glucose in women diagnosed with gestational diabetes mellitus: a systematic review and meta-analysis of randomized trials. *J Diabetes*. 2017;9(11):1023–1032. doi:10.1111/1753-0407.12519
7. Magro-Malosso ER, Saccone G, Di Tommaso M, Roman A, Berghella V. Exercise during pregnancy and risk of gestational hypertensive disorders: a systematic review and meta-analysis. *Acta Obstet Gynecol Scand*. 2017;96(8):921–931. doi:10.1111/aogs.13151
8. Davenport MH, Ruchat SM, Poitras VJ, et al. Prenatal exercise for the prevention of gestational diabetes mellitus and hypertensive disorders of pregnancy: a systematic review and meta-analysis. *Br J Sports Med*. 2018;52(21):1367–1375. doi:10.1136/bjsports-2018-099355
9. Davenport MH, McCurdy AP, Mottola MF, et al. Impact of prenatal exercise on both prenatal and postnatal anxiety and depressive symptoms: a systematic review and meta-analysis. *Br J Sports Med*. 2018;52(21):1376–1385. doi:10.1136/bjsports-2018-099697
10. Davenport MH, Marchand AA, Mottola MF, et al. Exercise for the prevention and treatment of low back, pelvic girdle and lumbopelvic pain during pregnancy: a systematic review and meta-analysis. *Br J Sports Med*. 2019;53(2):90–98. doi:10.1136/bjsports-2018-099400
11. Dipietro L, Evenson KR, Bloodgood B, et al.; 2018 PHYSICAL ACTIVITY GUIDELINES ADVISORY COMMITTEE. Benefits of physical activity during pregnancy and postpartum: an umbrella review. *Med Sci Sports Exerc*. 2019;51(6):1292–1302. doi:10.1249/MSS.0000000000001941
12. Chan CWH, Au Yeung E, Law BMH. Effectiveness of physical activity interventions on pregnancy-related outcomes among pregnant women: a systematic review. *Int J Environ Res Public Health*. 2019;16(10):1840. doi:10.3390/ijerph16101840
13. Nakamura A, van der Waerden J, Melchior M, Bolze C, El-Khoury F, Pryor L. Physical activity during pregnancy and postpartum depression: systematic review and meta-analysis. *J Affect Disord*. 2019;246:29–41. doi:10.1016/j.jad.2018.12.009
14. Cai C, Ruchat SM, Sivak A, Davenport MH. Prenatal exercise and cardiorespiratory health and fitness: a meta-analysis. *Med Sci Sports Exerc*. 2020;52(7):1538–1548. doi:10.1249/MSS.0000000000002279
15. Morales-Suárez-Varela M, Clemente-Bosch E, Peraita-Costa I, Llopis-Morales A, Martínez I, Llopis-González A. Maternal physical activity during pregnancy and the effect on the mother and newborn: a systematic review. *J Phys Act Health*. 2020;18(1):130–147. doi:10.1123/jpah.2019-0348
16. Díaz-Burrueco JR, Cano-Ibáñez N, Martín-Peláez S, Khan KS, Amezcua-Prieto C. Effects on the maternal-fetal health outcomes of various physical activity types in healthy pregnant women. A systematic review and meta-analysis. *Eur J Obstet Gynecol Reprod Biol*. 2021;262:203–215. doi:10.1016/j.ejogrb.2021.05.030
17. Ribeiro MM, Andrade A, Nunes I. Physical exercise in pregnancy: benefits, risks and prescription. *J Perinat Med*. 2021;50:4–17. doi:10.1515/jpm-2021-0315
18. de Castro R, Antunes R, Mendes D, Szumilewicz A, Santos-Rocha R; Can Group. Exercise programs improve health outcomes in pregnant women? An updated systematic review. *Int J Environ Res Public Health*. 2022;19(8):4875. doi:10.3390/ijerph19084875
19. Klein WW. Current and future relevance of guidelines. *Heart*. 2002;87(6):497–500. doi:10.1136/heart.87.6.497
20. Institute of Medicine. *Clinical Practice Guidelines: Directions of a New Program*. Committee to advise the public health service on clinical practice guidelines. Washington DC: National Academy Press; 1990.
21. SMA – Sports Medicine Australia. Pregnancy and exercise. Women in sport; 2017. Available from: https://sma.org.au/sma-site-content/uploads/2017/08/SMA-Position-Statement-Exercise-Pregnancy.pdf. Accessed September 9, 2022.

22. Bø K, Artal R, Barakat R, et al. Exercise and pregnancy in recreational and elite athletes: 2016/2017 evidence summary from the IOC expert group meeting, Lausanne. Part 5 - Recommendations for health professionals and active women. *Br J Sports Med*. 2018;52(17):1080–1085. doi:10.1136/bjsports-2018-099351
23. USDHHS - U.S. Department of Health and Human Services. *Physical Activity Guidelines for Americans*. 2nd ed. Washington, DC: U.S. Department of Health and Human Services; 2018.
24. Mottola MF, Davenport MH, Ruchat S-M, et al. 2019 Canadian guideline for physical activity throughout pregnancy. *Br J Sports Med*. 2018;52(21):1339–1346. doi:10.1136/bjsports-2018-100056
25. ACOG – American College of Obstetricians and Gynecologists. ACOG Committee Opinion No. 804: physical activity and exercise during pregnancy and the postpartum period. *Obstet Gynecol*. 2020;135(4):e178–e88. doi:10.1097/AOG.0000000000003772
26. RANZCOG - The Royal Australian and New Zealand College of Obstetricians and Gynaecologists. Exercise in pregnancy. RANZCOG; 2020. Available from: https://ranzcog.edu.au/womens-health/patient-information-resources/exercise-during-pregnancy. Accessed September 9, 2022.
27. UK Department of Health and Social Care. Physical activity guidelines: pregnancy and after childbirth. Infographics explaining the physical activity needed for general health benefits for women in pregnancy and after giving birth. Physical activity guidelines: pregnancy and after childbirth - GOV.UK; 2019. Available from: www.gov.uk. Accessed September 9, 2022.
28. Campos SB, Buglia S, Colombo CS, et al. Position statement on exercise during pregnancy and the post-partum period - 2021. *Arq Bras Cardiol*. 2021;117(1):160–180. English, Portuguese. doi:10.36660/abc.20210408
29. Brown WJ, Hayman M, Haakstad LAH, et al. Australian guidelines for physical activity in pregnancy and postpartum. *J Sci Med Sport*. 2022;25. doi:10.1016/j.jsams.2022.03.008
30. Evenson KR, Mottola MF, Artal R. Review of recent physical activity guidelines during pregnancy to facilitate advice by health care providers. *Obstet Gynecol Surv*. 2019;74(8):481–489. doi:10.1097/OGX.0000000000000693
31. Szumilewicz A, Worska A, Santos-Rocha R, Oviedo-Caro MA. Evidence-based and practice-oriented guidelines for exercising during pregnancy. In: Santos-Rocha R, editor. *Exercise and Physical Activity During Pregnancy and Postpartum. Evidence-Based Guidelines*. 2nd ed. Switzerland: Springer International Publishing; 2022:Ch.7.
32. EIM/ACSM. Being active during pregnancy. Exercise is Medicine/American College of Sports Medicine; 2019. Available from: https://www.exerciseismedicine.org/assets/page_documents/EIM_Rx%20for%20Health_Pregnancy.pdf. Accessed September 9, 2022.
33. ACSM - American College of Sport Medicine. ACSM information on pregnancy physical activity. American College of Sports Medicine; 2020. Available from: https://www.acsm.org/docs/default-source/files-for-resource-library/pregnancy-physical-activity.pdf?sfvrsn=12a73853_4. Accessed September 9, 2022.
34. NHS - National Health Service. Exercise in pregnancy; 2020. Available from: https://www.nhs.uk/pregnancy/keeping-well/exercise/. Accessed September 9, 2022.
35. AGDH - Australian Government. Department of Health. Guidelines for physical activity during pregnancy; 2021. Available from: https://www.health.gov.au/resources/publications/physical-activity-and-exercise-during-pregnancy-guidelines-brochure. Accessed September 9, 2022.
36. Kohl HW, Craig CL, Lambert EV, et al.; Lancet Physical Activity Series Working Group. The pandemic of physical inactivity: global action for public health. *Lancet*. 2012;380(9838):294–305. doi:10.1016/S0140-6736(12)60898-8
37. Blair SN. Physical inactivity: the biggest public health problem of the 21st century. *Br J Sports Med*. 2009;43:1–2.
38. Atkinson L, Teychenne M. Psychological, social and behavioural changes during pregnancy: implications for physical activity and exercise. In: Santos-Rocha A, editor. *Exercise and Physical Activity During Pregnancy and Postpartum. Evidence-Based Guidelines*. 2nd ed. Switzerland: Springer International Publishing; 2022:Ch.2.
39. Hayman M, Reaburn P, Alley S, Cannon S, Short C. What exercise advice are women receiving from their healthcare practitioners during pregnancy? *Women Birth*. 2020;33(4):e357–e362. doi:10.1016/j.wombi.2019.07.302
40. Okafor UB, Goon DT. Providing physical activity education and counselling during pregnancy: a qualitative study of midwives' perspectives. *Nig J Clin Pract*. 2021;24:718–728.
41. Findley A, Smith DM, Hesketh K, Keyworth C. Exploring womens' experiences and decision making about physical activity during pregnancy and following birth: a qualitative study. *BMC Pregnancy Childbirth*. 2020;20(1):1–10. doi:10.1186/s12884-019-2707-7
42. Szumilewicz A. Who and how should prescribe and conduct exercise programs for pregnant women? Recommendation based on the European educational standards for pregnancy and postnatal exercise specialists. *Dev Period Med*. 2018;22(2):107–112.
43. van Poppel M, Owe KM, Santos-Rocha R, Dias H. Physical activity, exercise and health promotion for the pregnant exerciser and the pregnant athlete. In: Santos-Rocha A, editor. *Exercise and Physical Activity During Pregnancy and Postpartum. Evidence-Based Guidelines*. 2nd ed. Switzerland: Springer International Publishing; 2022:Ch.1.
44. Petrov Fieril K, Fagevik Olsén M, Glantz A, Larsson M. Experiences of exercise during pregnancy among women who perform regular resistance training: a qualitative study. *Phys Ther*. 2014;94(8):1135–1143. doi:10.2522/ptj.20120432
45. Santos-Rocha R, Corrales-Gutierrez I, Szumilewicz A, Pajaujiene S. Exercise testing and prescription during pregnancy. In: Santos-Rocha R, editor. *Exercise and Physical Activity During Pregnancy and Postpartum. Evidence-Based Guidelines*. 2nd ed. Switzerland: Springer International Publishing; 2022:Ch.8.
46. Szumilewicz A, Santos-Rocha R. Exercise selection during pregnancy. In: Santos-Rocha R, editor. *Exercise and Physical Activity During Pregnancy and Postpartum. Evidence-Based Guidelines*. 2nd ed. Switzerland: Springer International Publishing; 2022:Ch.9.
47. EuropeActive. EuropeActive standards - European qualification framework level 5 - pregnancy and postnatal exercise specialist; 2016. Available from: http://www.ehfa-standards.eu/es-standards. Accessed September 9, 2022.
48. Atkinson L, Shaw RL, French DP. Is pregnancy a teachable moment for diet and physical activity behaviour change? An interpretative phenomenological analysis of the experiences of women during their first pregnancy. *Br J Health Psychol*. 2016;21(4):842–858. doi:10.1111/bjhp.12200
49. Rabiepoor S, Rezavand S, Yas A, Ghanizadeh N. Influential factors in physical activity amongst pregnant women. *Baltic J Health Phys Activity*. 2019;11(2):36–45. doi:10.29359/BJHPA.11.2.04
50. Tanha FD, Ghajarzadeh M, Mohseni M, Shariat M, Ranjbar M. Is ACOG guideline helpful for encouraging pregnant women to do exercise during pregnancy? *Acta Med Iran*. 2014;52(6):458–461.
51. Santos-Rocha R. *Exercise and Sporting Activity During Pregnancy. Evidence-Based Guidelines*. Switzerland: Springer International Publishing; 2019.

52. Santos-Rocha R. *Exercise and Physical Activity During Pregnancy and Postpartum. Evidence-Based Guidelines*. 2nd ed. Switzerland: Springer International Publishing; 2022.
53. Perales M, Nagpal TS, Barakat R. Physiological changes during pregnancy. Main adaptations and discomforts and implications for physical activity and exercise. In: Santos-Rocha A, editor. *Exercise and Physical Activity During Pregnancy and Postpartum. Evidence-Based Guidelines*. 2nd ed. Switzerland: Springer International Publishing; 2022:Ch.3.
54. Pimenta N, van Poppel M. Body composition changes during pregnancy and effects of physical exercise. In: Santos-Rocha A, editor. *Exercise and Physical Activity During Pregnancy and Postpartum. Evidence-Based Guidelines*. 2nd ed. Switzerland: Springer International Publishing; 2022:Ch.4.
55. Branco M, Santos-Rocha R, Aguiar L, Vieira F, Veloso AP. Biomechanical adaptations of gait in pregnancy. Implications for physical activity and exercise. In: Santos-Rocha A, editor. *Exercise and Physical Activity During Pregnancy and Postpartum. Evidence-Based Guidelines*. 2nd ed. Switzerland: Springer International Publishing; 2022:Ch.5.
56. Bø K, Stuge B, Hilde G. Specific musculoskeletal adaptations in pregnancy: pelvic floor, pelvic girdle and low back pain. Implications for physical activity and exercise. In: Santos-Rocha A, editor. *Exercise and Physical Activity During Pregnancy and Postpartum. Evidence-Based Guidelines*. 2nd ed. Switzerland: Springer International Publishing; 2022:Ch.6.
57. ACSM - American College of Sports Medicine. *ACSM's Guidelines for Exercise Testing and Prescription*. 11th ed. Wolters Kluwer Health; 2021.
58. Santos-Rocha R, Prior de Freitas J, Fernandes de Carvalho M. Active pregnancy YouTube chanel. https://www.youtube.com/channel/UC0Vyookwc0mcQ5T70imtoNA/playlists. Accessed September 9, 2022.
59. Santos-Rocha R. Guia da Gravidez Ativa. Atividade Física, Exercício, Desporto e Saúde na Gravidez e Pós-Parto. ESDRM-IPS. Rio Maior: edições ESDRM, 2020. ISBN: ISBN: 978-989-8768-26-1 (print); 978-989-8768-27-8 (e-book). [Active Pregnancy Guide; Portuguese]. Available from: https://www.researchgate.net/profile/Rita-Santos-Rocha/research. Accessed September 9, 2022.
60. Santos-Rocha R, Prior de Freitas J, Fernandes de Carvalho M. Agenda da Gravidez Ativa. Atividade Física, Exercício, Desporto e Saúde na Gravidez e Pós-Parto. ESDRM-IPS. Rio Maior: edições ESDRM, 2021. ISBN: 978-989-8768-28-5 (print); 978-989-8768-29-2 (e-book). [Active Pregnancy Agenda; Portuguese]. Available from: https://www.researchgate.net/profile/Rita-Santos-Rocha/research. Accessed September 9, 2022.
61. Santos-Rocha R, Prior de Freitas J, Fernandes de Carvalho M. Gravidez Ativa – Manual do Programa de Exercício Físico. Instituto Politécnico de Santarém - Escola Superior de Desporto Rio Maior, 2021. ISBN: 978-989-8768-30-8 (print); 978-989-8768-31-5 (e-book). [Active Pregnancy Exercise Program Manual; Portuguese]. Available from: https://www.researchgate.net/profile/Rita-Santos-Rocha/research. Accessed September 9, 2022.
62. Santos-Rocha R. Avaliação e prescrição de exercício durante a gravidez. Instituto Politécnico de Santarém - Escola Superior de Desporto Rio Maior, 2022. ISBN: 978-989-8768-37-7 (print); 978-989-8768-38-4 (e-book)). [Exercise testing and prescription during pregnancy; Portuguese]. Available from: https://www.researchgate.net/profile/Rita-Santos-Rocha/research. Accessed September 9, 2022.
63. Santos-Rocha R, Silva MRG, Dias H, Jorge R. Promoção da atividade física e do exercício durante a gravidez e o pós-parto - Guia para profissionais de saúde. Instituto Politécnico de Santarém - Escola Superior de Desporto Rio Maior, 2022. ISBN: 978-989-8768-35-3 (print); 978-989-8768-36-0 (e-book). [Exercise and physical activity promotion during pregnancy and postpartum – health professionals' guide; Portuguese]. Available from: https://www.researchgate.net/profile/Rita-Santos-Rocha/research. Accessed September 9, 2022.
64. Worska A, Szumilewicz A. Aktywność fizyczna kobiet w ciąży w świadomości przyszłych instruktorów rekreacji ruchowej (Physical activity of expecting mothers in the awareness of future exercise professionals; Polish). *J Educ Health Sport*. 2015;5(8):91–102.
65. Szumilewicz A, Santos-Rocha R, Worska A, et al. How to HIIT while pregnant? The protocols characteristics and effects of high intensity interval training implemented during pregnancy - a systematic review. *Baltic J Phys Activity Health*. 2022;14(1):1–16.
66. Nagpal TS, Everest C, Goudreau AD, Manicks M, Adamo KB. To HIIT or not to HIIT? The question pregnant women may be searching for online: a descriptive observational study. *Perspect Public Health*. 2021;2021:1757913920985898.
67. Meah VL, Davies GA, Davenport MH. Why can't I exercise during pregnancy? Time to revisit medical 'absolute' and 'relative' contraindications: systematic review of evidence of harm and a call to action. *Br J Sports Med*. 2020;54(23):1395–1404. doi:10.1136/bjsports-2020-102042
68. CSEP/SCPE. Get active questionnaire for pregnancy (GAQ-P). Canadian Society for Exercise Physiology (CSEP); 2021. www.csep.ca/getactive questionnaire-pregnancy. Accessed September 9, 2022.
69. EuropeActive and Education: building and consultation process: https://www.europeactive-standards.eu/es-standards. Accessed September 9, 2022.
70. EuropeActive. Exercise in Pregnancy and Postpartum Lifelong Learning Standard, 2022.
71. Mills H, Atkinson L, Olander EK, et al. A bump start needed: linking guidelines, policy and practice in promoting physical activity during and beyond pregnancy. *Br J Sports Med*. 2019;54:13.
72. De Vivo M, Mills H. "They turn to you first for everything": midwives' perspectives on roles, responsibilities, and barriers in providing physical activity advice and guidance during pregnancy. *BMC Pregnancy Childbirth*. 2019;19:462. doi:10.1186/s12884-019-2607-x
73. Szumilewicz A. *The New Era of Pre- and Postnatal Exercise - Training for Instructors and Trainers of Various Forms of Physical Activity in the Field of Online Provision of Exercise for Pregnant and Postpartum Women (The NEPPE Project)*. Poland: Gdansk University of Physical Education and Sport, Financed by Polish National Academic Exchange Agency (NAWA); 2021–2023.
74. Santos-Rocha R, Szumilewicz A, Pajaujiene S. Exercise prescription and adaptation in the early postpartum. In: Santos-Rocha A, editor. *Exercise and Physical Activity During Pregnancy and Postpartum. Evidence-Based Guidelines*. 2nd ed. Switzerland: Springer International Publishing; 2022:Ch.10.
75. Berriman J, Szumilewicz A, Bogdanova A, Collins C. Standards for people and places in the fitness and physical activity sector. In: Middelkamp J, Rutgers H, editors. *Operational Excellence and Transformative Leadership*. Brussels, Belgium & Den Bosch, the Netherlands: EuropeActive & BlackBox Publisher; 2021:128–147.
76. Union CE. Council Recommendation of 22 May 2017 on the European Qualifications Framework for lifelong learning and repealing the recommendation of the European Parliament and of the Council of 23 April 2008 on the establishment of the European Qualifications Framework for lifelong learning. *J Eur Union*. 2017;2017:15–28.
77. European Commission. Recommendation of the European Parliament and of the Council of the 18 June 2009 on the establishment of a European Credit System for Vocational Education and Training (ECVET). *J Eur Union*. 2009;155:11.
78. EC. *ECTS Users' Guide*. Luxembourg: Publications Office of the European Union; 2015.
79. BE-TWIN. ECVET-ECTS: building bridges and overcoming differences. A methodological guide produced in the framework of the BE-TWIN Project. 2010.