ORIGINAL ARTICLE

EKO-AGRO-FITNESS© original author's continuous program of health-oriented and ecological education in the family, among friends or individually implemented – the premises and assumptions

Authors' Contribution:
A Study Design
B Data Collection
C Statistical Analysis
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E Funds Collection

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Abstract

Background and Study Aim: There are many empirical and a common-sense argument that physical education is not an effective method of promotion and health prevention. On the contrary – in many cases turns in their denial. The aim of the paper is the main premises and assumptions of the EKO-AGRO-FITNESS© (E-A-F) program as an alternative of the physical education.

Material/Methods: An analysis of professional literature. The synthesis and generalizing results of long-term observation participating in different forms of the physical training of children, youths and adults, in systems of educating staffs widely understood sport science, military cadets of all sorts groups, as well as results of many studio visits in states of four continents. Generalizations of the phenomena results are inherent to the interdisciplinary concept of health promotion and prevention.

Results: An educational mission of E-A-F is to combine motor safety and human effort safety with rational diet and preference physical activity mainly in the natural surroundings of nature, caring about its quality. Achieving specific objectives of E-A-F assure complementary health-related training, whose leading element is the prevention of injuries. Effects accomplishment of the mission and goals of the E-A-F is on the one hand the basic knowledge of: identifying factors threatening the health; the positive health self-evaluation; the methods for measuring and documenting the physical effort; about methods of developing, maintaining, restoring health in all its dimensions – somatic, psychological, social; about methods of diagnosing and developing psychomotor competences necessary to survive in emergencies. On the other hand – confidence and ability to implement the method of certain exercises categories during individual trainings or in family/friends circle.

Conclusions: The E-A-F project for creative tourism or sport manager, businessman, public life manager on the one hand is a chance for promotion of firms, micro- and macro regions rich in natural resources of unique landscape, healthy air, water and food, on the other hand – achieving economic success. Above all it is an opportunity to engage in the promotion and health prevention as much as possible and stable dimension – this dimension does not have the financial equivalent.

Key words: complementary health-related training • motor safety • effort safety • ecology • injury prevention • Knowledge Society

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Background

The aim of the paper is the main premises and assumptions of the EKO-AGRO-FITNESS© (E-A-F) program as an alternative of the physical education. At the base of the creation of the E-A-F, in a broader sense of "E-A-F concept" is awareness of the inability to meet the broader mission of physical education in local environment in many countries all over the world. The mission of physical education we find in two ways – in the interim sense and from the perspective of generation responsibility.

Interim mission of the physical education is defined in a general sense as a daily or cyclic necessity – in the week – of physical activity stimulates all dimensions of health: somatic, mental, social. Do not fall out of the question extreme forms of activity that are a high risk of losing health or life [1–4]. This does not mean that a person should not be prepared to deal with difficult situations, which may predestine about it existence. On the contrary, this aspect of adaptation to the environment of modern human is in the program (concept) of E-A-F particularly exposed.

Mission of the physical education from the perspective of generation responsibility we find – as continuous updating knowledge about the factors that threaten health and the ways, methods and means of diagnosis, expansion, maintenance, rehabilitate, supported by regular physical exercises and relaxation-concentration, and the fixed habits of healthy lifestyle in the ontogeny of the individual and persons of its surroundings (especially family members).

Exemplification of the criticism of the system of physical education, we limit mainly to the data from Polish. This is a consequence of editorial restrictions for paper published in a scientific journal. This is not the only reason. On the one hand, we have easy access to the Polish scientific literature, media, the possibility of direct observation and the use of other sources. On the other hand – the perspective of the immediate implementation of the ECO-AGRO-FITNESS© opens just in Poland [5]. Due to editorial limitations we also refers to the short movies of the electronic handbook *Decent self-defence – the theoretical and methodological basis of training* [6] and other own articles, to prove that formulated premises and assumptions have the empirical and theoretical solid base, but also are the result of many years of studies and researches.

Material and Methods

Analysis of professional literature (concepts, ideas, research results, legal documents related to: sport, physical education, health, staff training, management, organization of research involving humans, evaluation of scientific and educational achievements etc.; media and information from other sources – such as the Internet, related to the subject of the study of this paper).

Synthesis and generalization of the results of own, long-term participated observation (the various forms of physical training of children, youths and adults, staff educational systems of the widely understood physical culture sphere, different formations of military cadets, police, prison officers, firemen, internal experience, as a result of direct participation in combat sports and health training).

Generalization own research, study visits, organizational and administrative experiences.

Results

Structural, hygienic and physiological absurdities of physical education

It is a general rule on a global scale that physical education classes (usually 45–50 minutes long) fall between other classes. Since breaks between classes are usually 10 minutes long, it is not enough time for hygienic procedures (shower, hair drying etc.), fluid supplement, rest that would allow mental focus necessary for active participation in subsequent classes such as mathematics, physics, chemistry, geography, history. This situation – apart from the attractiveness of physical education class itself – is not accepted by students and parents thus the physical education classes' absence amounts to over 50%.

Number of physical education classes conducted outdoor is smaller than indoor classes, even though there is much valid empirical evidence of benefits of outdoor activities to somatic, mental and social health [7–11].

Duration of physical education classes is the same for primary and secondary school (i.e. gymnasium and high school in Poland). Since the 45–50 minutes long physical education classes are standard on a global scale it suggests there is a reason why PE teachers accept such a structural solution. In Poland for 60–70% of school-aged youth, PE is the only organized form of physical activity and in recent years only a few percent of students accept the classes [12]. It shows that need to increase the exercise time during PE classes is only one of important issues. The other, clearly more important one is the attractiveness of PE classes which directly corresponds to teachers' qualifications.

The issue of increasing of physical exercise time in period when the body needs optimal strengthening of

Type 1 – acquiring and developing skills.

Type 2 – selecting and applying skills, tactics and rules.

Type 3 – evaluating and improving performance with emphasis on evaluating.

Type 4 – knowledge and understanding of fitness and health (theoretical basis).

Zone 1 – low intensity exercise <140 beats per minute /bpm/ (below 50% HRR – hear rate reserve).

Zone 2 – moderate intensity exercise 140–159 bpm (51–65% HRR).

Zone 3 – moderate or high intensity exercise 160–179 bpm (66–80%).

Zone 4 – high intensity exercise ≥180 bpm (over 81% HRR).

Such analysis of the biological potential (psychomotor) facilitates praxeological conception possibility of action, because distinguishes three derivative key terms – flexible feasibility, situational feasibility, the full (complete) possibility of action.

Flexible feasibility – power, intellectual or manipulative proficiency and knowledge (ability) and sufficient willingness to carry out given action.

Situational feasibility – carrying out given action in determined circumstances is not prevented by this circumstances.

Somebody has full (completed) flexible and situational possibility of action, i.e. has sufficient power, knowledge, and efficiency (intellectual or manipulative) in order to carry the given action out in the moment t, possibility of the non-performance of it and has possibility of putting off until later moment of carrying the given act out.

From praxeological perspective certain action can be productive – nonproductive – counterproductive – neutral. The action is counterproductive when a doer achieved the opposite of intended goal. [27, p. 220].

natural development tendencies is not raised as explicitly and often [13,14] as the issue of physical exercise intensity. While there is a long tradition of monitoring the low intensity of physical exercise [11,15–18], there has been no radical steps taken to improve the problem.

Despite important recommendations on youth physical activity standards [19, 20] recent Polish research proves [21] that physical exercise intensity of 13 year old students (girls and boys) still does not meet those standards. The intensity of most PE classes **type 1, 2 and 3** (according to nomenclature of English national program [22]) did not exceed heart rate of 140 beats per minute (**zone 1** [23]).

The average exercise intensity for 13 year old girls (HR 128.3–116.6) calculated for type 1 classes, regardless of activities [21], qualifies for the low intensity exercise [23]. Using the same criteria for 22 years old female physiotherapy student (HR 143.4 – own unpublished research) who took safe fall class the intensity of exercise qualifies as moderate. According to criteria set by Pollok et al. [24] the intensity for 22 years old female student was high (HRmax =193 calculated as 208 – (0.7 × age) [25]) and for 13 years old girls average. Authors [21] assessed HRmax =197 for girls based on Ball State University Formula [23].

The above analysed data and comparative data of intensity structure of 45-minute long type 1 classes (different activities) for 13 years old gymnasium pupils [21] and 21 years old female physiotherapy students participating in safe fall class [26] indicate four important elements influencing adaptive effects. First of all, the intensity of physical exercise during PE classes is not determined a priori by the class type or activities – those are two non-subjective elements. Classes' intensity is determined mostly by a competent teacher (provided that commitment is important element of competence) and informed and creative student.

It is important but not sufficient to describe expectations towards student using only psychological categories (informed, creative) and towards teacher using partly psychological categories (committed). Also terminology of physical culture and sports medicine is not sufficient in such analyses. Since the analysis concerns purposeful actions of both subjects (teacher and student) it is practical to use terminology of praxeology when posing statements with high degree of generalization. Thus in the most generalized sense teacher's competence and expectations towards student can be reduced to the "possibility of action" category in the sense of *flexible and/or situational possibility of action* [27]. Terminology of different sciences such as psychology, physical culture, sports medicine etc. also fits in these praxeological categories [28].

To give an example; naming teacher's commitment as a priority among other competences can prove to be counterproductive considering all the objectives of PE, example: gymnastics class conducted by a reverend (see [6] film *Mala Education* in video folder).

Such system of physical education cannot be associated with moulding good health and hygienic habits for a lifetime or with expected results of optimal physical fitness and cardiovascular performance. Accuracy of this theory has been proved by scientists who took part in presentation during 4th International Symposium Youth Sport 2008 – The Heart of Europe entitled *Progressive model of physical education* [14].

Professional burnout of PE teachers as a factor reinforcing physical education crisis

Latest research proves that among Polish PE teachers over 27% (female teachers being majority) can be qualified as affected by professional burnout, over 58% as not affected and the rest as partially affected [30].

The first factor which impedes conducting classes the most – leading to mental exhaustion, distancing from students and impersonal approach to students – is the shortage of exercise equipment. The second problem is the fact that two groups of students have simultaneous classes at the same gym. The third issue is that PE classes are taking place in the corridor too often. The shortage of proper equipment is the main problem for female PE teachers, while male teachers find it most difficult to conduct classes while there is another group of students in the same sports room. In the discussion over results authors note that male teachers prefer team games as a mean to achieve physical education goals, while female teachers (who usually conducts classes with younger students and girls) more frequently use motor play activities, and team games and gymnastics with similar frequency. In conclusion authors state that one of the necessary competences of PE teacher is ability to handle difficult conditions [30].

Bad work conditions and conflict atmosphere turned out to be the reasons for fully symptomatic professional burnout syndrome of German PE teachers [31]. However among globally observed factors that contributes to professional burnout of PE teachers the most common ones are: marginalization of the role of PE and PE teachers in schools (depreciating attitude of headmasters and teaching staff), negative attitude of other teachers, lack of opportunities for personal development [32–35].

Shortcomings of systemic evaluation of the health condition of school youth and systemic solutions for health prevention in regard to physical education

There is a clear asymmetry between generation of knowledge on different aspects and hazards of somatic, mental and social health of people of different ages, professions etc., and two categories of implementation that should be derivative that knowledge.

Above mentioned knowledge we owe too hard to estimate number of original papers and relatively smaller number of review articles published annually in thousands of journals of the life sciences category (including physical culture and sports medicine). Furthermore it is hard not to appreciate the value of periodical WHO reports. Direct proof of rational processing of this knowledge are numerous available monographs, academic handbooks and books popularizing information meant to support practicing of physical education, sports and health training (as a leaders of global distribution can point such a journals like *Human Kinetics).* At the same time the lack of implementation – as an expected aftermath of processing research results – applies to: (1) systemic evaluation of the health condition of the school youth; (2) systemic solutions for health prevention in regard to physical education. Quality measure of such systemic solutions is mutual feedback and relations between systems with science and main entities of Knowledge Based Society.

An isolated positive example is functioning of both systemic solutions in Slovenia. On the national scale the „SLO FIT System" has been introduced as a tool to monitor physical and motor development of children and youth [36]. Suitable national institutions intervene whenever optimal conditions for stimulation of biological development of school youth are not met. Even though health prevention support concerns three basic levels (school, boroughs, region) it is still addressed on a personal level. Periodical tests are taken by all the students. Tests results on one hand are a substantive basis to revise curriculums and adjust them to personal needs and abilities of each student. On the other hand – the results are basis for personal evaluation of professional competences of PE teachers.

Discussion

If we accept this synthetically expressed empirical argumentation, it seems to be correct to conclude that publications on the discussed topic are not studied by institutions responsible for the education of the teaching staff or by PE teachers, or public life figures that are responsible for health prevention including physical education and universal sport. In other words – even though knowledge on the discussed topic is widely available, it is not monitored systemically on the decision making levels and is not implemented into practice. Quite contrary – new utopias are created.

Almost every other PE teacher suffers from professional burnout or partial burnout [30]. One of the main reasons for professional burnout is shortage of proper equipment, the fact that two groups of students have simultaneous classes at the same gym and that PE classes are taking place in the corridor too often. PE teachers on the other hand lack skills to deal with difficult conditions. Meanwhile the PE teachers' system (based on the educational standards [37]) prepares teachers for comfortable conditions. Majority of activities are team games (handball, volleyball, basketball, soccer), gymnastics, swimming, athletics. Academies of Physical Education and other public and non-public schools for PE teachers are equipped with multifunctional sport halls, swimming pools, athletics stadiums. Such infrastructure guarantees simultaneous classes of diverse content (volleyball, gymnastics, swimming, athletics etc.) for many students groups (future PE teachers). In typical municipal school the standard solution is sports room and sports field with hard surface next to the school building (usually handball/basketball field) where classes can be conducted 3 to 5 months a year, if weather allows. In the village schools lawny sports field are more common where students can play football and practice athletics only during a few months a year, if the weather allows. That is a reason why simultaneous PE classes for a couple of pupils groups are held in the school building (same gym or school corridor). Governmental program "Orliki" has been implemented for two years in order to support sport and physical education. In boroughs and municipal housing estates there are multifunctional sports field build with artificial surface and lighting. Unfortunately Poland is located in the climatic zone where snow and low temperatures makes it impossible to use these fields for 4–5 months a year. Should all those financial resources be invested in alteration of already existing sport infrastructure in schools it would not only improve classes comfort for students and teachers but also help preventing professional burnout among PE teachers. It is practical to add specialised small sports rooms in primary schools and gymnasiums. Some of them can be used for fitness or dance classes; it is also easy to temporary install table tennis equipment. Other sports rooms can be covered with judo puzzle mats, that are cheap and easily available, can be used for martial arts training, self-defence, yoga or gymnastics classes etc. The easiest modification is installing curtains in the sports room which allows

Effort safety is consciousness of the person who starts physical effort or consciousness of the subject who has the right to encourage or even enforce from this person the physical effort of a certain intensity and duration, who it is able to do so without risking life or health.

Motor safety is consciousness of the person undertaking to solve a motor task or consciousness the subject who has the right to encourage and even enforce from this person that would perform the motor activity, who is able to do it without the risk of the loss of life, injuries or other adverse health effects.

Hapkido – Korean martial art, its tradition goes back over 2 thousand years. Yong Sul Choi is regarded for animator of current Hapkido, first he named this martial art Yu Sool, then changed it to Yu Kwon Sool. Master Ji Han Jae changed this name to Hapkido [47].

the division of a room into 2-3 smaller, more private spaces. High schools should be additionally equipped in body building rooms. According to Supreme Audit Office findings in 2010 Polish PE teachers prefers team games and gymnastic exercises. Other activities such as table tennis, dance, aerobics and swimming are marginal part of all PE classes [38]. Thus above quoted observations by Brudnik and Rutkowski [30] are confirmed.

On soft surface, so in the small sports room covered with mats, it is possible to teach students safe fall techniques which are still underestimated but very effective method of preventing bodily injuries [39]. According to statistical data at the top of the list of bone fractures causes are elderly falls (45.3%), followed by direct strokes in accidents and fights (14.1%) and sports injuries including those caused by fall (12.8%) [40]. Austrian program "Sicheres Fallen" (safe fall) has not only been implemented over 20 years ago but it also gained insurance company patronage [41]. Probability of bodily injury caused by fall is much lower in case of a person who is familiar with safe fall techniques compared to an unprepared person. That is why people who show suitable certificate confirming they attended a safe fall class get an insurance discount.

Japan is good example of optimisation of both sports infrastructure in all school types and PE curriculums. At the end of 20th century (1998) in Japanese public and non-public schools as well as at universities the number of pupils and students was (in millions): pre-school (2.170), primary school (7.766), gymnasium (4.380), high school (2.430), universities (2.430) – total (20.896). Available were: 53 251 sports halls, 51 019 stadiums, 35 370 outdoor swimming pools, 12 319 basketball fields, 11 605 judo rooms, 10 156 kendo rooms, 4 611 indoor swimming pools, 2 863 athletics fields, 2 854 handball fields. During PE classes gymnasium students took part in 35 martial art classes (judo, kendo) in 3 years [42]. Another important innovation was recognition of sumo (like judo and kendo) as a part of Japanese national cultural heritage and addition of this discipline to PE curriculum [43]. It did not take long to see the sports effects of general judo education – apart from benefits of prevention bodily injuries caused by fall (*ukemi waza*). During 2010 world championships Japanese judo competitors won 10 gold medals (6 women, 4 men) out of 16 available, 4 silver and 9 brown medals. That is perfect example of how general physical education can be natural system of selection of talented sports people. Effects are even deeper in the health, mental and ethical sense. Measure of sports talent is not only energetic potential, ability to learn difficult moves etc. but also high tolerance for physical strain. This last ability interprets directly into **effort safety**, especially for kids and youths starting their adventure with sport. It is estimated that yearlong judo course is finished by only 5–10% participants [44]. The reason for this are: (1) bad tolerance of physical strain/exercise; (2) unpleasant experiences with frequent falls and compensation of different physical pressures on the body associated with every martial art. It means exceeding limits of effort safety as well as **motor safety**. Unpleasant experiences at this level may discourage to physical activities later on.

Phenomenon of martial arts popularity has been observed on global scale for many years. In Poland 70% people with academic education who train martial arts think that martial arts should be included in the PE curriculum (properly selected), 19% think martial arts should definitely be included and only 11% do not think it is needed. People with academic education who do not train martial arts answered the above question respectively 57%, 27% and 16%. The lower the level of education the more respondents think martial arts should be included in the PE curriculum [45]. Unfortunately among programs submitted for competition of Minister of Education and Sports "Alternative programs of physical education and sport in school" (legal basis: regulation of MENiS of 06.11.2003) only one (awarded one) was based on **hapkido** [46]. Since 2003 at two (currently one) Polish universities educating PE teachers author's program "Propaedeutic of martial arts – judo basis" [48] has been implemented. Even though several hundred students have finished this program there are no academic or media reports on implementation of the program in Polish schools. Moreover there are reasons to assume there is serious systemic error. According to educational standards [37] graduate of post-graduate university is educated in specific character of PE teacher's work in secondary schools and at universities with focus on: preparing author's programs, evaluation of pupils' achievements, innovation and research, evaluation of PE quality in Polish schools in comparison with other countries. Physical education faculty graduates' competences are: planning, implementation and evaluation of physical education process in different types of schools, organizing of pupils' self-assessment, preparing and evaluation of author's programs; planning, organizing and evaluation of results of physical education research. Among authors of scientific publications in Polish journals concerning physical education and sports medicine, no authors affiliating primary schools, gymnasiums or high schools has been reported [49].

In discussing results we stress the importance of martial arts for human motor development especially as important elements (means) of preventing bodily injuries. We find it troublesome that those elements are omitted in PE programs in schools at the ministry's decision levels

as well as in PE practice (as a result of low creativity of PE teachers). Editorial limitations do not allow broader discussion over possibilities of using martial arts in developing all aspects of health (somatic, mental and social) and motor competences beyond safe fall techniques. These are key issues for anticipated effects of E-A-F program. Moreover we omit relations between more and more popular wellness concepts associated with martial arts [ex. 50] and far-reaching perspective of E-A-F program implementation. The example of this perspective are playful fights between father and his three sons (see [6] film 0093 in video folder) similar to educational fights in the animal world. On one hand it is obvious that teacher cannot replace parents during such form of exercise. On the other hand nowadays there are only few parents who are familiar with the technique.

We do not predict radical systemic changes in physical education in most of Polish schools only because in 2008 minister of Education issued regulation modifying curriculums for pre-schools and other types of schools [51]. Very important regulation that each school should develop its own curriculum applies also to physical education classes but in practice it is dead letter since it has not been supported by other regulations that would enforce radical changes of structure and content of physical education and necessary evaluation of subjects responsible for PE and sports in school in the broader context of health prevention (see p. 1 and 3 "Results"). Without such basic changes it is impossible to achieve on III educational stage (gymnasiums) very important goal of: *developing personal and social skills contributing to health and safety*; and on IV stage (high schools): *ability to develop and implement physical activity plan adapted to personal needs*. Even the most attractive physical education classes are not enough to achieve above mentioned goals. It is necessary to shape hygiene and reasonable rest habits after each planned physical activity. Program should also include theoretical knowledge taught in very accessible, visual form. It is hard to imagine establishing effects without improving knowledge in handbooks.

Those goals can be achieved within frames of EKO-AGRO-FITNESS© concept that at the same time can be alternative for self-fulfilment of creative PE teachers.

Conclusions

Empirical argumentation presented in the "Results" part, with added justification and explanation in the "Discussion" part of this article, is enough of a premise to establish general guidelines of E-A-F program.

1. Evidence of many shortcomings of physical education as well as of low standard of health attitude on global scale (towards oneself and others) is enough justification that E-A-F's accurate educational mission is integration of motor and strain safety with reasonable diet as well as favouring physical activity outdoors.

2. **Complementary health-related training**, which main element is prevention of bodily injuries, assures achievement of particular E-A-F goals.

3. Result of realization of the mission and goals of E-A-F is on one hand basic knowledge on: identifying health hazard factors; self-assessment of positive health; methods of measuring and documenting of physical exercise; methods of developing, maintaining and restoring health – somatic, mental and social; methods of diagnosing and developing psychometric competences necessary for survival in hazardous situations. On the other hand – certainty and ability to implement patterns of methodology of certain exercise categories during personal training or among other people (family, friends).

Complementary health-related training – is coherent system of using such methods and means which affects body in complex way. The most valuable ones are those which stimulate all health dimensions (somatic, mental and social health), motor and strain safety, and develop wide range of motor survival competences.

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