ISSN 2084-6002

Opole University of Technology
University of Balearic Islands
State Higher Vocational School
in Raciborz

Journal of Physical Education & Health

Social perspective

Volume 3
Issue 5
2014

ISSN 2084-6002

Opole University of Technology
University of Balearic Islands
State Higher Vocational School
in Raciborz

Journal of Physical Education & Health

Social perspective

Volume 3
Issue 5
2014

Published by: Opole University of Technology
in association with: University of Balearic Islands
State Higher Vocational School in Raciborz

Editorial Office Address:

Politechnika Opolska
Wydział Wychowania Fizycznego i Fizjoterapii
ul. Prószkowska 76
45-758 Opole
budynek nr 9 p. 23

www.jpe-health.pwsz.raciborz.edu.pl

jpe_health@onet.eu

Administrative editor: Katarzyna Kasowska
Technical editor: Janusz Krajewski
Correction: Rachael Sumner

ISSN 2084-6002

Contents

Original Papers

Information

Journal of Physical Education & Health, 2014, vol. 3 (5), 5-18

THE COACH AS EDUCATOR: CONTENT AND PEDAGOGICAL FRAMEWORKS

Blake Bennett[1], Ian Culpan[2]

[1] School of Sport and Physical Education, University of Canterbury, New Zealand

[2] New Zealand Centre for Olympic Studies, School of Sport and Physical Education, University of Canterbury; New Zealand

Abstract

Despite an increase of academic activity directed at sport coaching it continues to lack conceptual frameworks that address the complex realities of the coaching environment. Present practice largely rejects the proliferation of research regarding inadequacies of traditional methods for enhancing athlete learning. Dominant coaching practices forego recognition of the complex responsibilities that a coach has within the cognitive, social, cultural and moral, dynamics of the coaching environment. This article argues that first and foremost a coach is an educator. Given this role, sport coaching needs to develop and align itself with more contemporary developments in education. In this alignment, conceptual frameworks need to be developed. In this development, two questions immediately need to be addressed. First, if the coach is an educator what content can they draw from to educate the athlete in a holistic sense? Second, 'what pedagogy/pedagogies will enhance this content delivery in order to maximise holistic athlete development?' Drawing on the supportive arguments of scholars it is suggested that Olympism provides a useful content related coaching framework. In addressing the second question it is suggested that a pedagogical constructivist framework utilizing psychological, social and critical components of constructivism provides the 'best of constructivist worlds' The conceptualisation of the two frameworks; An Olympism based content framework and a synthesised constructivist pedagogical framework gives due focus to an overall coaching framework that is educative, engaging and moving coaching in a more professional direction. It consolidates the coach as educator in an environment which is progressive, educationally sustainable and with a strong focus on meaning-making, reflection and reciprocity.

Key words: *Coach education, conceptual frameworks, Olympism, constructivist pedagogies*

1. Introduction

Despite an increased emergence of academic research and writings concerning the field of coaching and coach education, coaching is still an "ill-defined and under-theorised field" [18, p. 3] It lacks conceptual frameworks that satisfactorily address the complex realities of the coaching environment [18]. Coach education scholars report that the majority of present coaching programmes are significantly limited and confined to traditional and largely coach-centred instructional techniques [15]. Such coaching is characterised by the coach controlling and disseminating technical content knowledge [25, 22, 15]. These inadequacies result in little regard for individual learning needs of athletes, little cognisance given to individual meaning-making in sport and little attention given to the range of pedagogical strategies available in order to maximise learning [15].

If the goal of the coach as an educator is to enhance the athlete's control over his or her own development (across the physical, cognitive social, cultural and moral domains) then education practices that singularly promote a traditional, technical, content development are ineffective [3]. The practice of coaching with conceptual frameworks and pedagogies that largely favour the dissemination of technical content knowledge in a traditional coach-centred manner reject the proliferation of research regarding the benefits of athlete-centred coaching for enhanced and on-going learning [3]. Furthermore, the design of coaching programmes in this manner resists the changes, assumptions, interests, and characteristics seen in contemporary youth culture [25, 15]. These

scholars, along with Cushion, Armour and Jones [9] argue that the need to develop more dynamic and thoughtful coaches requires encouragement of a range of coaching frameworks and pedagogies that complement the dissemination of content knowledge within athlete-centred contexts. The tendency of coaching programmes to favour technical content (technocratic approach) fails to provide coaches with the necessary breadth of content knowledge and pedagogical content knowledge to implement strategies needed to effectively create a positive learning/coaching environment that engages and develops diverse learners [9].

Light [22] suggests that this 'technocratic' approach to the coaching process is commonly observed hand in hand with pedagogical strategies that position the coach squarely in control of the learning environment. The technocratic coach perceives his/her knowledge as an object or commodity of which he/she maintains ownership and control [24, 15]. As such, learning is viewed as a process of merely transferring and internalising this knowledge [15]. As a consequence, the power resides with the coach and balance of it favours a coach-centred model [22]. All this is in spite of a growing body of research that suggests a coach-centred approach can limit the learning environment [38].

This restrictive approach to coaching implies that the coach's role is merely one of instructing, conveying, and/or modelling a set of (physical) skills for the purpose of enhanced performance [26]. This understanding foregoes recognition of the complex responsibilities that a coach has within the cognitive, social, cultural and moral, dynamics of the coaching environment. It also fails to acknowledge the coach-athlete relationship [18, 9]. Such complexities confirm the coaching role as one of more than a mere instructor of technical content knowledge. However, as a result, the aforementioned technocratic approach to coaching that remains predominant today [15], scholars in the field of sport and physical education suggest that the coach is still not considered an 'educator'. Further, the idea that coaching is a complex educative, pedagogical, social, cultural and ethical process lacks appropriate acknowledgement [18].

Sport coaching, arguably, in the same manner as other education contexts addresses cognitive, social, cultural and moral development considerations. It also has the additional concern for development of physical competence. For this reason, the coaching process must be considered more than a simple conveyance of physical/technical skills with benefits limited to athlete performance, health and fitness, or as the case may be, a transference of 'bio-scientific' knowledge [18]. Rather, it is indeed, as Jones [18] asserts, a complex, multifaceted, and socially significant, and we suggest, interactive reciprocating, and engaging educative process.

2. Purpose

On the basis of the physical, cognitive, social, cultural, and moral dynamics and responsibilities a coach must consider in this the multifaceted coaching environment [18] their role is first and foremost as an educator. The wide array of education considerations including pedagogical strategies available to educators can and, should be, accessed by coaches to assist them in working towards the intended holistic benefits of athlete development. Therefore, the purpose of this article will:

- Argue for the conceptualization of the coach's role as an educator;
- Identify the 'traditional' barrier(s) that prevent a coach fulfilling his/her role as an educator;
- Suggest content related and pedagogical oriented frameworks to reinforce and facilitate the coach operating as an educator.

3. The Coach as Educator

Historically, 'teaching' and 'coaching' have typically been regarded as separate endeavours – a perception accentuated by dominant discourses found in the apparent parent disciplines of education and sports science respectively [18]. As opposed to the 'holistic and problematic emphasis' found in the education literature that tends to inform teaching, the dominance of physiology, psychology and biomechanics in the sports coaching literature has located coaching in the realm of practice and performance [18, p. 6]. As Lee [21] suggests, while 'teaching' and 'educating' has dealt with an individual's overall development, coaching has

been understood in terms of the attainment of physical skills and the application of these skills in competition. Jones [18] and Cushion et al. [9] view the field of pedagogy as an interactive and engaging social process. Further, we are mindful of the description of pedagogy as "any conscious activity by one person designed to enhance learning in another" [43, p. 3]. Within these conceptual understandings, it is argued that the sports coach is also charged with the responsibility of establishing an environment for athletes (learners) to learn and thus 'grow' as players and individuals. One such requirement is the coach's ability to communicate and maintain positive relationships with the learner, as these can be determinants of success [30]. Nakamura [36] contends that this is a far more educative, social and pedagogical context than the traditional technocratic approach allows. Accordingly, the link between pedagogical practice and coaching processes are significantly less distant than historically believed.

Additional to this justification of the coach as educator, Jones [18] suggests that in contrast to the belief that mechanistic performance is the primary focus of the coaching process, maximising athlete learning is markedly more important. To achieve this, education and pedagogical theory can and must inform coaching practice.

Light and Dixon [23] commenting on the role of education into the future, stress that a contemporary society requires citizens to be "lifelong learners, problem solvers, reflective independent learners, and creative and innovative thinkers" (p. 160). Light and Dixon [23] further argue that, "learning is not restricted to formal schooling, but is; instead, a lifelong process within which schooling (including higher education) forms one significant component" [23, p.160]. This suggests that it is the responsibility of the educator to afford the learner the skills to become such a citizen.

Further, in response to the dominant understanding of the coaching process as a mere transference and internalization of content, [15] highlight the position taken by Arnold [1]. Arnold [1] asserted that sport is a valued human practice, one that could make significant contributions to enhancing the human experience. He further suggested that sport could aid in the construction of a meaningful pattern to life and assist individuals and groups to become more fully human [1]. This position was previously highlighted in the preamble of the *International Charter of Physical Education and Sport* [42] where it is proclaimed that physical education and sport are not limited to physical well-being and health but are an important contributor to the full and well-balanced development of the human being [42]. This UNESCO position on physical education and sport has since been supported by many government sanctioned documents regarding the educative and social benefits of participating in sport and physical education: for instance, the recent Berlin *Declaration* [41], The *New Zealand Curriculum* [28], the *Revised European Sports Charter* [5] and the European Model of Sport [13]. These documents, to varying extents, recognise and highlight the idea that learners learn in different ways, based on their socio-cultural backgrounds, and various movement experiences, needs, abilities and aspirations. Furthermore, these documents suggest that in movement contexts, physical educators and sport educators need to be mindful of student diversity, consider psychomotor, cognitive and social learning domains and utilise a range of pedagogies that meet learner needs and the content being (re)produced. This is to suggest that if it is indeed a learning environment that a sport coach is required to establish, the same mindfulness should apply [18]. Arguably, despite the broader education and particular pedagogical content knowledge required of a physical education teacher, as opposed to the typically specialised role of the sport coach, it is suggested here that the learners (athletes) are still learning thinking human beings, and, therefore, require coaching programmes to address physical, cognitive, social, cultural and moral domains in the coaching/learning process. This argument becomes particularly important if the abovementioned benefits of engagement in sport and physical education are to be achieved.

Given the acknowledgement that coaching is a complex activity it becomes clear that the aptly stated onus of contemporary education objectives to develop "lifelong learners, problem

solvers, reflective independent learners, and creative and innovative thinkers" [23, p.160] to suit a rapidly changing society can be, as Arnold [1] alludes to, attained through sport. If this is the case, then, the responsibility of the sport coach is just as crucial as other educators in the development of well-rounded citizens. As coaching is concerned with the teaching and learning of athletes to grow as players and human beings, the key concepts of the educative process apply equally as much to coaching as they do to physical education teaching or any other sphere of education [18]. This understanding of the coaching process provides a clearer portrayal of the sport coach as more than mere "technicians engaged in the transfer of knowledge" [26, p.9].

4. Traditional Barriers to the Coach as Educator

Historically, coaching has focussed on technical content knowledge [22]. Such an approach to coach education is typically associated by pedagogical strategies where the coach is decisively positioned in control of the learning environment [22, 15]. These scholars suggest that within this approach, knowledge is considered an object, and learning is simply reproducing that knowledge.

In their recent study of an elite level New Zealand based coach education programme (CEP), Galvan et al. [15] report findings which suggest that, despite the propensity for the 'technocratic' coach-centred approach to inhibit the learning environment to a point where practices and cultures are simply mindlessly reproduced, the impression of the coach as a technician "engaged in the transfer of knowledge" [26, p.9] maintains its dominant presence in coaching and in coach education. The case studies conducted by Galvan et al. [15] confirmed that, like many other CEPs around the world, this New Zealand based elite level programme also placed emphasis on technical skill development "with little regard to pedagogical ways of promoting this knowledge" [15, p. 11]. This reinforces the view of the coach as an instructor rather than an educator. This conclusion aligns itself with Tinning's [40], argument that coach education courses devote very little time to pedagogy and/or research into coaching pedagogies and as a result lag behind many innovative developments in understanding human learning and pedagogies that can facilitate this learning.

Current sport and physical education literature [15, 23] emphasise the pitfalls of a traditional, instructor centred approach to learning where the internalisation of a fixed body of knowledge is the primary concern. These scholars argue that, irrespective of the age of young learners, a fast changing social, cultural, and economic world renders the traditional fixed body of knowledge approach out of touch with the reality of how today's youngsters actually learn [23]. Light and Dixon [23] suggest that it is now more important to give equal consideration to pedagogies that assist young people to 'learn how to learn', rather than the singular content focus on 'what to learn'. In supporting this 'how to learn' approach Culpan and McBain [6] argue that such learning is imbedded in pedagogies that allow learners to construct their own meaning and sense of purpose within movement contexts. This analysis reinforces Lombardo [25] who commented that at the turn of the 21st century, coaching education structures have had a propensity to resist many transformations concomitant with youth culture, and that the ingrained coaching models were "incongruent with the expectations, needs, assumptions, interests, and characteristics of many athletes" [25, p.2].

5. Frameworks for the Coach as Educator

For sport coaching to develop and align itself with more contemporary developments in education two questions immediately need to be addressed. First, if the coach can be conceptualised as an educator what content can they draw from to educate the athlete in a holistic sense? Second, 'what pedagogy/pedagogies will enhance this content delivery in order to maximise holistic athlete development?'

In addressing the first question, Arnold [1] argued that sport could be a valued human practice when characterised in a certain manner. His thesis was that sport, when characterised by: rules, traditions, specific goals, physical exertion,

social interaction, rivalry/contest/competition, and practised in a moral and ethical manner, was valued by individuals and society. In other words Arnold [1] argued that in general terms sport was valued because it contained 'goods' (values) that humans found desirable and worthwhile commitments. These desired 'goods' enhance and enrich the human condition/experience. In conceptualising sport in this manner Arnold [1] was suggesting that sport had significant educative value. This value can be found in both the inherent values that sport could generate within and of itself [27, 32] or through the transference of values from personal positions/beliefs, societal standards and/or educational systems. Martinkova [27] labelled the values transferred from these areas to sport as sport's 'added values'. She argued that the development and implementation of sport's added values were not 'fixed' but dependent on contextual arrangements. She also argued that these added values needed special pedagogical attention and should become the concern of physical education teachers and coaches as they are considered desirable educative, social and ethical outcomes. Indeed Martinkova [27] suggests values guide and direct the education and development of people and that it is difficult to imagine any education system without them.

In regards to the inherent values found in sport Martinkova [27] and Parry [32] claim that simply engaging in the sport and/or its practice is sufficient for the values to be realised. For instance, Martinkova [27] illustrates this argument by highlighting the competitive characteristic of a team sport. In competition the goal is victory and striving for victory is achieved by physical exertion, self discipline, focused attention, rule adherence, self and collective improvement, decision making and the willingness to cooperate within the team and with the opposing team. As Marinkova [27] suggests, without cooperation there can be no competition. Martinkova [27] labels these as inherent values and are strongly inter-related to each other. They are neither fixed nor immutable but vary from context to context. They are learned by simple engagement and coaches and athletes do not necessarily have to do anything special beyond the training process to promote them [27].

On the other hand, however, Marinkova [27] and Parry [32] suggest that sport's added values present more of a challenge as stated above – they need to be given special consideration. In essence Parry [32] argues that sport's added values draw on the social construction of sport and tend to be more humanistic in nature and form the basis of sport's educative value. They are both the concern of the physical education teacher and the sport coach. They are added to sport in order to make sport more educative, virtuous and humanising [16]. This fosters ethical human development [32]. Such values enrich the sporting experience and moderate, but do not diminish the competitive nature of sport [27]. Indeed, de Coubertin argued that without the moderating effect of added values, sport competition ran the risk of excessiveness which he labelled 'vulgar competition' [29]. Instead, de Coubertin promoted a balanced integration of the inherent values of sport manifested through sport competition and the humanistic added value. This integration he called Olympism and exemplifies what is understood as the Olympic Spirit [29]. As Martinkova [27] argues:

> Both of these kinds of values need to be recognised and kept together. Keeping them both means we omit neither of these two aspects of Olympism – we do not reduce it (sport) but keep its richness together: both sport competition and an ethical and full human life [27.p.118].

This article suggests utilising Olympism in this manner provides a possible content related Conceptual Framework for coaching that has been identified earlier as lacking in the coaching process. In suggesting Olympism as a possible and useful conceptual content related coaching framework it is necessary to briefly develop an explanation of Olympism.

5.1 Olympism

Olympism is a 'philosophy' that draws on the 'goods' (values) inherent in sport (i.e. striving for victory, personal betterment, perseverance, controlled aggression, rule adherence, self and focused discipline and the humanistic ideals (added values) i.e. respect for others, non-discrimination, unity, friendship, international understanding, peace, generosity and tolerance.

As Martinkova [27] argues these values - both 'inherent' and 'added' - are inter-related and woven into the competitive sports experience in a complex manner. The complexity resides in coordinating and giving coherence to the desire for victory, holistic education, and the quest to being ethical and human. This, in essence, becomes part of the coaching challenge and can be viewed as the challenge of being an Olympism education coach. Therefore, we argue that coaches, as educators, need to give special attention to Olympism in the coaching process. As educators, the coach's role requires the following: 1) identification of the values inherent in any given sport, 2) identification of the values that are educationally and pedagogically desirable to add, 3) an understanding of how these two sets of values form the philosophy of Olympism and 4) identification of the coaching pedagogies that can best foster the learning of both sets of values (inherent and added) in order to maximise the coaching process.

While scholars have struggled to settle on an immutable definition of Olympism [2] a useful working conceptualisation for the purpose of this article is presented. Olympism can be viewed as a way of life that blends sport with culture and education. It encourages a way of life characterised by

- balanced development of body, will and mind;
- the joy found in effort;
- the educational value of being a good role model; and
- observing the universal ethics of tolerance, friendship, unity, non-discrimination, generosity, and respect for others (adapted from the Olympic Charter), [17].

In providing this working conceptualisation we are mindful and acknowledge that Olympism is highly contested. Damkjaer [10], Simonovic [37] and Wamsley [44] challenge the relevancy of the whole concept of Olympism and argue that it is a conceptual and philosophical remnant of the fixed order of the modern age. Implicit in this criticism is that Olympism is immutable and its educational legitimacy questionable. Bale & Christensen [2] question the universal nature of Olympism while Wamsley [44] argues that Olympism is Eurocentric and complicit in the colonising process. He further argues that Olympism is used for legitimising the commercial world of capitalism. In particular, Wamsley [44] asserts that Olympism and the Olympic Games are so intimately associated with the political economy of Western Capitalism and Eastern Bloc state capitalism that it cannot achieve the objectives proclaimed in the Olympic Charter. Kidd [19], while seemingly supportive of Olympism, is sceptical about the rhetoric surrounding the plethora of Olympics education programmes, so too are Culpan and Wigmore [8]. However, in acknowledging these criticisms and the problematic practices of the Olympic Games we agree with Parry [33] that while some may see Olympism as a naïve and fond hope, "the philosophy of Olympism has been the most coherent systematization of the ethical and political values underlying the practice of sport so far to have emerged" [33, p. 214]. We would go even further than Parry [32] and suggest that Olympism is also the most coherent educative explanation of sport to have emerged over the last 100 years. Noteworthy in our analysis is the differentiation made between the concept of Olympism and the problematic practices of the Olympic Games. Culpan and Wigmore [8], Parry [33] and previously Arnold [1] suggest that Olympism is a rightful and legitimate part of the education process. The promotion of Olympism, they argue, is best maximised through physical education and sport education in schools. The thesis of this article is that it is should also become the focus of the coaching process and be central and pivotal to the coach as educator.

Drawing on the supportive arguments of Arnold [1], Culpan and Wigmore [8], Naul [31] and Parry [33], it is suggested here that the concept of Olympism provides a useful content related coaching framework. More specifically, it can assist in addressing the earlier comment that sport coaching lacks conceptual frameworks that address the complexities of the coaching environment. For instance analysis of the working definition above shows that Olympism can provide for:

- the development of physical excellences in terms of athletic skill development
- the engagement in sport and by definition competitive sport which leads to the

development of values inherent to and within specific sporting practices
- a move beyond mere technocratic coach centred foci to more holistic development of the athlete in terms of cognitive, social, cultural and moral development
- assistance for the athlete to take more control of his/her development
- placement of the athlete at the centre of sport competition learning and learning the humanistic value of human development
- an integrated focus on 'added values' that assist in the development of virtuous and ethical athletes.

The importance of Olympism to the coaching process requires coaches to educate within the contexts of specific sporting activities. This education is dependent on coaches being aware of the ways the two sets of values are integrated and connected to create a holistic content development framework. As Culpan and Moon [7] suggest, this is Olympism education and can apply to the coaching process as well as the schooling context. Culpan and Moon [7] define Olympism education as: "a culturally relevant experiential process of learning an integrated set of life principles through the practice of sport." This is what we suggest to be the focus of any content related coaching framework.

However, in making this suggestion, the second question proposed earlier what pedagogy/pedagogies will enhance this content delivery in order to maximise holistic athlete development? now needs attention.

5.2 A Pedagogical Framework

Pedagogical discourses have become ubiquitous in teaching and learning contexts and the terms physical education pedagogy and sport pedagogy are firmly established as academic sub-disciplines [40]. Indeed, in higher learning institutions, such discourses are accompanied by conceptual frameworks to facilitate learning. However, as alluded to earlier, sport coaching is bedeviled by a paucity of conceptual pedagogical understandings and frameworks. In arguing for positioning the 'coach as educator', pedagogical considerations become pivotal. While pedagogy is central to the coaching process [40] we are mindful of the complexities of the multi-facetted coaching environment and indeed the complexities and diversities associated with pedagogy/ pedagogies. As Tinning [40] argues, there is no Holy Grail of physical; education (*coaching*) pedagogies. However, in acknowledging these sentiments, we also point out the claim by Stones [39] that pedagogy is likened to an amoeba - constantly changing and without shape or form. Therefore, we believe it is necessary, if pedagogical conceptual understandings around coaching are to progress, to be suggestive in regards to coaching pedagogy. In being suggestive, a general orientating conceptual framework for coaching is required. This framework can be neither prescriptive nor absolute but rather a framework that is nimble, educationally current, well supported by the pedagogical literature and adaptable to diverse sporting contexts. With this in mind, a pedagogical constructivist framework is suggested. Fosnot [14], drawing on the area of constructivism, argued that approaches to teaching (*coaching*) and learning needed to avoid the pitfalls of prescription. Rather, they should encourage educators (*coaches*) to think about what is being learned, how it is learned, and how the educator can facilitate that learning – the pedagogical encounter. In utilizing a pedagogical constructivist framework for coaching there are three main areas: of relevance: the psychological, the social and critical components of a constructivist pedagogical framework [36].

5.2.1 Psychological constructivism

Drawing on a psychological constructivist position would mean that the coach's view on the coaching/learning process would understand that the athlete interprets and makes individual sense and meaning out of any pedagogical encounter. That sense making is created in the individual athlete's mind by the construction of cognitive schema and maps where new information is processed, compared and added to existing knowledge structures [35]. As Culpan and McBain [6] suggest, this process of learning is best maximized when the learner is actively involved in the learning process. Coaches utilizing this component of constructivism need to

consider the learners as independent entities who actively select the knowledge from which they wish to make meaning from. It is here that the coach as facilitator needs to skillfully emphasize the important learning points in order for meaning-making to occur.

Psychological constructivist approaches focused on an Olympism content framework can provide opportunities to explore perceptions on individual performance, personal development, tensions, anxieties and meanings in relation to the learners' own sporting competition, performance and participation in sport. There is considerable scope for individuals to construct individual meaning, knowledge and personal position-taking in regards to exploring and understanding the quest for self betterment, how the training process contributes to that betterment, and what is needed to achieve this. Furthermore, tensions inherent in sport, such as individual versus group responsibilities and freedom; personal understandings of others in relation to: non-discrimination, respect, tolerance, justice, the educative value of role modeling and the personal meanings attributed to the balanced development of the mind, body and spirit, are all considerations in constructing reflective meaning. All aspects need to be fostered in the education of the athlete. As Culpan and McBain [6] argue, with facilitation there is opportunity to promote active engagement in processing the individual construction of meaning, as nothing is more relevant to learners than themselves. This psychological constructivism provides individual meaning, relevance and authenticity and encourages high degrees of personal reflection.

5.2.2 Social constructivism

Pritchard [34] draws the distinction between psychological and social constructivism by identifying the learner (athlete) in psychological constructivism as the lone explorer making individual and personalized meaning from experiences. On the other hand, social constructivism takes into account the learner's social environment. Social constructivists propose that interacting with the social, cultural and the environmental domains, the learner, constructs knowledge that is meaningful and relevant to her/himself and to the social cohort with whom they interact [12]. Interaction with others is a critical determinant of learning and the educative process. By 'others', we refer to coaches, fellow athletes, peers, family, teachers and community. In the coaching/sportive context, social constructivists believe the process of knowledge construction comes about as athletes become socialized into the techniques, knowledge, expectations, practices, symbols, relevance and ethical considerations of their sport. The information gained from others via social interaction is processed much in the same way as in the psychological component i.e development of schema and scaffolds so that new information can be integrated into existing understandings. The richness and complexity of interpretations, opinions and knowledge exchanged in the coaching process through social interaction is likely to lead to greater meaning-making and greater learning insights [34]. Leach and Moon [20] call this process the develpment of learning communities. These learning communities can provide learners with opportunities to develop their skills through practice and to interact by sharing understandings of educative and social worth (competitive values and added values). These simultaneously highlight the moral and ethical dilemmas within sport. Drawing on this framework would underline the richness and educative complexity of the coaching process. Coaches participating in such interactive social arrangements with their athletes, create the potential to challenge the understandings of the sportive process and its role in balanced human development - both from a performance and human learning perspective. This sort of engagement is what Culpan and Moon [7] identify as Olympism Education.

5.2.3 Critical constructivism

Psychological and social constructivism, while essential components of the coaching pedagogical framework only partially complete it. Completion of the framework necessitates the incorporation of a critical pedagogical dimension. Scholars Cassidy et al. [3], Gavin et al. [15] have suggested that coaching lacks a critical tradition. As such, in order for coaching to better align

itself with contemporary developments in education, including physical education, a critical approach to coaching has merit in progressing the pedagogy of coaching [3, 15]. We agree, however, we temper this advocacy by supporting a critical constructivism. By adopting this critical constructivist approach to complete the framework for coaching, we highlight how the critical approach

> centres on the ways in which power, the economic, political and social factors affect the ways in which groups of people form understandings and formal knowledge construction about their world [36, p. 1642].

Richardson [36] suggests that the critical dimension of a constructivist framework focuses on learning that is culturally orientated and contributes to the contextual understanding of the big social system that the learner is operating within. As Culpan and McBain [6] suggest, it provides a contextual foundation in which understandings about the relationship between power and knowledge can be constructed and analyzed. It is about identifying inequalities and empowering individuals and groups to take social action to achieve change. Tinning [40] argues, drawing on a critical perspective can provide alternative approaches to the analysis and construction of knowledge, particularly in regards to the economic, social, political and moral beliefs and structures that dominate Western thinking. For sport coaching, the adoption of a critical perspective allows for the potential inclusion of new understandings, visions, voices and intellectual curiosities and creativities [6]. By adopting critical constructivism within a coaching context, opportunities emerge for both the coach and athlete to ask critical questions about: learning processes utilized in coaching, about the ethical behaviour of athletes and coaches, and how seeking performance improvement can be developed in an integrated, balanced and holistic manner with the concept of Olympism. As Martinkova [27] argues, it is when these considerations come together, sport captures its potential to develop human excellences. Furthermore, a critical constructivist approach to coaching will also assist in the development of a critically reflective consciousness within both the coach and the athlete. This sort of criticality will inevitably, foster the emergence of changes in both coaching processes and understandings of the sportive context. These understanding will encourage both the coach and athlete to make informed decisions around locating themselves within particular sporting cultures and to adopt a criticality to the principles of Olympism.

By synthesizing the psychological, social and critical components of constructivism into a coaching framework we draw on the support of Cobb [4] who suggested that the three separate components of constructivism become natural allies. Indeed, Richardson [36] argued that employing this synthesis "represents a process in the best of all possible worlds that is dialogical and rational, and creates a shared and warranted set of understandings" [36, p.1625].

While it is not the purpose of this paper to engage in the praxis of constructivism from a coaching perspective, it is important to acknowledge that the application of a synthesized constructivist framework for coaching, particularly a critical constructivist dimension, is pedagogically complex and difficult (see Darder, Torres and Baltodano [11] for specific suggestions concerning certain and specific knowledge and technique). As Galvan et al. [15] report, changing coaching processes takes times, particularly in regards to changing thinking and practice. However, in identifying the complexity and acknowledging the prolonged period for change to take place, it seems that perhaps an early step in pedagogical implementation should involve the development of 'reflective coaches and athletes'. The development of reflective practice, particularly critical reflection, may provide coaches and athletes with the much needed flexibility to acknowledge the complexity and diversity associated with the coaching process. Acknowledgement by both coaches and athletes creates opportunities to construct, deconstruct and reconstruct relationships, new interpretations and challenge taken-for-granted assumptions. It allows opportunities to seek alternatives to their practices and make obvious the need for deliberate, conscious and intentional actions. As Galvan et al. [15] suggest, "this process can liberate coaches from traditional mindsets reproducing what they know" [15, p.137] and

open new visions and possibilities. It creates opportunities for the coaching process to seek new knowledge and move beyond past boundaries. We are suggesting that this sort of pedagogical framework enhances the coaching processes and fosters the development of content associated to Olympism that can address the wide ranging short comings of coaching highlighted earlier.

In giving due diligence to both content and pedagogical frameworks for educating the coach and athlete, a reciprocating relationship creates a rich educative environment which is suitable for fostering individual meaning-making, capturing the educative and social power and potential of sport, utilizing the humanistic positioning of Olympism and systematically addressing the benefits of the critically reflective tradition. By achieving this sort of coaching context, the coach truly becomes an educator in the very best sense of the word. The process is educative, engaging, reciprocating and, importantly, pedagogically coherent.

6. Concluding Remarks

Despite sport in the 21st Century being ubiquitous across the globe, the coaching of it remains under-theorised and under-developed. This paper has highlighted the need for the coach's role to be conceptualised as an educator. Justifications for this role conceptualisation have been presented and barriers that prevent this happening have been highlighted. The thesis of this paper has acknowledged the importance of athlete growth and development (particularly from a holistic perspective) and the need for those engaged in sport to capture its full educative and social potential. Pivotal in achieving this, is the need for sport coaching to draw on the body of research that informs educational practice today. This research will allow the coach to realise that sport involves more than physical performance. Potentially the research guides the coach into looking beyond coach centred technocratic instructional behaviours and to recognise the important and diverse responsibilities that they have. This article argued that by doing this, coaches are better placed to maximise athlete learning. In advocating for the coach as educator, the paucity and inadequacy of conceptual coaching models has been acknowledged. As a result, two critically important questions were posed: 'what is the content used to educate?' and 'What pedagogies might assist in achieving this quest?' In addressing these two questions it is proposed that the philosophy of Olympism is a worthwhile conceptualisation of sport that has particular content relevance to coaching. The concept of Olympism characterised, not by the study of the Olympic Games, but rather on the importance of integrating the inherent educative worth of sports competition with 'added humanistic values'- giving meaningful direction to the coaching process. As argued, Olympism can be considered the most systematic political and educative explanation of sport to have emerged in the last hundred years. These sentiments need to be woven into coaching frameworks

In addressing the second question of which pedagogies might assist in developing this coaching content, it was suggested that a synthesised pedagogical constructivist coaching framework be implemented The psychological, social and critical constructivist pedagogies are natural allies and the presence of all three in a coaching framework provide possibilities for the 'best possible world'.

The conceptualisation of the two frameworks; An Olympism based content framework and a synthesised constructivist pedagogical framework gives due focus to an overall coaching framework that is educative, engaging and moving coaching in a more professional direction. It consolidates the coach as educator in an environment which is progressive, educationally sustainable and with a strong focus on meaning-making, reflection and reciprocity.

BIBLIOGRAPHY

1. Arnold, P. (1997). Sport, ethics and education. London; Herndon, VA: Cassell.
2. Bale, J., & Christensen, M. (2004). Post-Olympism? Questioning sport in the twenty-first century. New York: Berg Publishers.
3. Cassidy, T., Jones, R. L., & Potrac, P. (2009). Understanding sports coaching: The social, cultural and pedagogical foundations of coaching practice (2nd ed.). New York: Routledge.
4. Cobb, P. (1996). Where's the mind? A coordination of sociocultural and cognitive perspectives. In C.T. Fosnot (Ed.). Constructivism: Theory, perspectives and practice (pp. 103-119). New York, NY: Teachers' College, Columbia University.
5. Council of Europe, (2001). The revised European sports charter. Brussels: Council of Europe.
6. Culpan, I., & McBain, S. (2012). Constructivist pedagogies for Olympism education. Asia-Pacific Journal of Health, Sport and Physical Education, 3(2): 95-108.
7. Culpan, I., & Moon, C. (2009). Olympism. Unpublished work. New Zealand Centre for Olympic Studies, University of Canterbury, New Zealand.
8. Culpan, I., & Wigmore, S. (2010). The delivery of Olympism education within a physical education context drawing on critical pedagogy. International Journal of Sport and Health Sciences, 8, 66-76.
9. Cushion, C. J., Armour, K. M., & Jones, R. L. (2003). Coach education and continuing professional development: experience and learning to coach. Quest, 55(3), 215-230.
10. Damkjaer, S. (2004). Post-Olympism and the aesthedcizadon of sport. In J. Bale & M. Christensen (Eds.), Post-Olympism: Questioning sport in the twenty-first century (pp. 211-230). New York: Berg Publishers.
11. Dardner, A., Torres, R., & Baltodano, M. (2002). The critical pedagogy reader. New York: Routledge Falmer.
12. Ernest, P. (1999). Social constructivism as a philosophy of mathematics. Albany: State University of New York Press.
13. European Commission, (1999). The European model for sport. Brussels: European Commission.
14. Fosnot, C.T. (1996). Constructivism: Theory and perspectives and practice. New York, NY: Teachers' College, Columbia University.
15. Galvan, H., Fyall, G., & Culpan, I. (2012). High-performance cricket coaches' perceptions of an educationally informed coach education programme. Asia-Pacific Journal of Health, Sport and Physical Education 3(2): 123-140.
16. Horne, J., & Jary, D. (1996). The figurational sociology of sport and leisure of Elias and Dunning: An exposition and a critique. In J. Horne, D. Jary & A. Tomlinson (Eds.). Sport leisure and social relations (pp.86-112). Keele: The Sociological Review.
17. International Olympic Committee (IOC). (2010). Olympic charter. Lausanne: IOC. Retrieved from http://multimedia.olympic.org/pdf/en_report_122.pdf
18. Jones, R. L. (2006). How can educational concepts inform sports coaching? In R. L. Jones (Ed.). The sports coach as educator: Re-conceptualising sports coaching. London: Routledge.
19. Kidd, B. (1996). Taking the rhetoric seriously: Proposals for Olympic education. Quest, 48, 82.
20. Leach, J., & Moon, B. (Eds.), (1999). Learners and pedagogy. London: Paul Chapman Publishers.
21. Lee, M. (1988). Values and responsibilities in children's sport. Physical Education Review, 11, 19-27.
22. Light, R. (2008). Complex learning theory-Its epistemology and its assumptions about learning: Implications for physical education. Journal of Teaching in Physical Education, 27, 21-37.
23. Light, R., & Dixon, M. (2007) Contemporary developments in sport pedagogy and the implications for sport management education. Sport Management Review 10(2), 159-175.
24. Light, R., & Fawns, R. (2003). Knowing the game: Integrating speech and action in games teaching through TGfU. Quest, 55(2), 161-176.
25. Lombardo, B. J. (1999). Coaching in the 21st century: Issues, concerns and solutions. Sociology of Sport Online (SOSOL), 2(1). Retrieved from http://physed.otago.ac.nz/sosol/v2i1/v2i1a4.htm
26. MacDonald, D., & Tinning, R. (1995). Physical education and teacher education and the trend to proletarianization: A case study, Journal of Teaching Physical Education, 15: 98-118.
27. Martinkova, I. (2012). Teaching values in movement activities: Inherent and added values. ACTA Universitatis Carolinae Kinathropologica, 48(2). 111-119.
28. Ministry of Education, (2007). The New Zealand curriculum. Wellington: Leaning Media.
29. Müller, N. (2000). Olympism: Selected writings. Lausanne: International Olympic Committee.
30. Nakamura, R. 1996). The power of positive coaching. Boston: Jones and Bartlett.
31. Naul, R. (2008). Olympic education. Oxford: Meyer & Meyer Sport.
32. Parry, J. (2012). The power of sport in peace-making and peace-keeping. Sport in Society 15(6). 775-787.
33. Parry, J. (2007). The religio-athletae, Olympism and peace. In J. Parry, S. Robinson, N. Watson, & M. Nesti (Eds.). Sport and spirituality: An introduction (pp. 201-214). London: Routledge.

34. Pritchard, A. (2009). Learning theories and leaning styles in the classroom. Retrieved from http://72.3.142.35/dxreader/jsp/StartReading.jsp?ñlenumber=1306449065008643 &url=http://72.3.142.35/dxreader/jsp/BookLoader.jsp
35. Pritchard, A., & Woollard, J. (2010). Psychology for the classroom: Constructivism and social learning. New York, NY: Routledge.
36. Richardson, V. (2003). Constructivist pedagogy. Teachers College Record, 105{9), 1623-1640.
37. Simonovic, D. (2004). Philosophy of Olympism. Retrieved from http://cirqueminime.blogcollecdve.coni/blog/_archives/2004/8/28/l 3148O.hdnl
38. Stephenson, B., & Jowett, S. (2009). Factors that influence the development of English youth soccer coaches. International Journal of Coaching Science, 3(1), 3-16.
39. Stones, E. (2000). Iconoclastes: Poor pedagogy. Journal of Teaching for Education, 2691), 93-95.
40. Tinning, R. (2010). Pedagogy and human movement: Theory, practice, research. London: Routledge.
41. United Nations Educational Scientific and Cultural Organisation, (UNESCO), (2013). The Berlin declaration. MINEPS V. 5th International Conference of Ministers and Senior Officials Responsible for Physical Education and Sport. Berlin 28-30 May: UNESCO.
42. United Nations Educational Scientific and Cultural Organisation, (UNESCO), (1978). International charter for physical education and sport. Paris: UNESCO.
43. Watkins, C., & Mortimore, P. (1999). Pedagogy: What do we know. In P. Mortimore (Ed.). Understanding pedagogy, (pp.1-19). London: Paul Chapman Publishing.
44. Wamsley, K. (2004). Laying Olympism to rest. In J. Bale & M. Christensen (Eds.). Post- Olympism: Questioning sport in the twenty-first century (pp. 231-240). New York: Berg Publishers.

Received: December 2013
Accepted: March 2014
Published: June 2014

Correspondence

Blake Bennett
Blake.bennett@pg.canterbury.ac.nz
Ian Culpan
Ian.culpan@canterbury.ac.nz

About the Authors

Blake Bennett

Blake Bennett is currently a PhD candidate in the School of Sport and Physical Education at the University of Canterbury, New Zealand. His thesis topic focuses on the rugby coaching methods used in both New Zealand and Japanese U13 - U18 rugby. He completed his Masters Degree in Sport Sciences at the Osaka University of Health and Sport Sciences, Japan, regarding coaching in the Japanese martial art of Kendo. His under-graduate Sport Coaching degree was completed at the University of Canterbury, New Zealand.

Ian Culpan

Ian Culpan is the Associate Professor and the immediate past Head of the School of Sciences and Physical Education at the University of Canterbury. He has strong interests in physical education/teacher education (PETE), Curriculum Development, Pedagogy, Sociology of Sport and Olympic/Olympism Education. He has a high national profile, led and directed many national initiatives in physical education, including curriculum and qualifications development, and has published and presented nationally and internationally. He was one of two principal writers of the1999 national physical education curriculum and served three years as the vice-president of NZHPER. He has been the national Journal Editor and is the immediate Past President of the New Zealand

Olympic Academy: Ian Culpan is the New Zealand delegate for the Federation Internationale d'Education Physique. (FIEP); is a Trustee of International Alpha Upsilon Chi which is an international honours Trust that recognises excellence in academic work of graduating students throughout the world and has been awarded the International Olympic Committee Trophy for Education and Sport (2000) and the Sir Alexander Gillies Medal for Physical Education (2001). Ian Culpan is a National Fellow for Physical Education New Zealand and for four years he co-coordinated the All Blacks Leadership Training programme. Ian established and directs the New Zealand Centre for Olympic Studies and has just been appointed director of the University of Canterbury's Physical Education and Sport Studies research Hub. Ian will take up a 2 month visiting professorship at Charles University in Prague in 2013.

Journal of Physical Education & Health, 2014, vol. 3 (5), 19-28

SOCIAL COMPETENCES AND EMOTIONAL INTELLIGENCE OF FUTURE PE TEACHERS

A statutory project of the UPE in Warsaw Ds. 174; subject: Influence of Workshops Making Use of the Video Interaction Training Method and Interpersonal Training on Development of Future PE Teachers' Social Competences and Emotional Intelligence.

Marcin Czechowski, Joanna Femiak, Anna Kuk

Józef Piłsudski's University of Physical Education in Warsaw

Abstract

The aim of the study is to establish the level of social competences and emotional intelligence amongst future P.E. teachers.

The method of diagnostic survey is applied and the Questionnaire of Social Competences (SCQ) and the Emotional Intelligence Questionnaire (INTE) – which is a Polish adaptation of a tool by Nicola S. Schutte et al. – are used in the study. The research was conducted in April and November 2012. The researched were 1st and the 2nd level students of the teaching specialisation of the Faculty of Physical Education, the UPE in Warsaw. Their total number was 156 – 70 women and 86 men aged 20-27.

It was found that the women had a higher level of social competences in the field of dealing with personal situations and the men had a higher level of social competences in situations requiring assertiveness. The women had a higher rate of emotional intelligence. No differences were found in rates of the researched persons' social competences and emotional intelligence regarding the level of studies. It was found that the respondents had a higher rate of social competences and the same rate of emotional intelligence in comparison with the results of the standardizing research.

Conclusions

1. Significant differences exist between the women and the men researched in the field of abilities for building social relationships. The women are more inclined to base those relations on intimacy and the men – on assertiveness.

2. There is a need to stimulate the development of PE teachers' social competences and emotional intelligence during the stage of university studies and after starting professional activity. Natural social training in the work environment and standard activities during studies seem insufficient for development of these kinds of predispositions.

Key words: *social competences, emotional intelligence, PE teacher*

Introduction

The physical education curriculum determined by provisions of the 2008 core curriculum, makes a PE teacher face a number of challenges. The most ambitious of them include realisation of the programme of health education and performing the function of its leader at school. Efficient realization of those tasks require a PE teacher to have a wide range of competences with social competences occupying the central position among them.

We understand social competences as "gained skills determining efficiency of functioning in social situations (…) skills of dealing with other people – of understanding them, of foreseeing their behaviours correctly, of influencing them, cooperating with them and leading them [7]."To put it simply, it can be assumed that social competences mean "(...) having skills which are necessary for exertion of a desirable influence on other people in social situations" [1]. In literature there are many conceptions of social competences, some authors include abilities – usually social and emotional intelligence [16], as well social knowledge [13] – among them. Others understand social competences as both

instrumental and motivational predispositions [3]. According to the opinion of the authors of the presented paper, the behavioural aspect is that which plays the main role in dealing with social situations – what means that it reflects the essence of social competences. Cognitive, emotional and motivational predispositions are abilities which constitute the foundation for development of skills – and that is why we connect social competences with particular skills in our considerations. Those skills are: dealing with one's tasks in situations of social exposition, in intimate situations, in situations requiring assertiveness and in communication situations. Regarding the last of these, we analyse: giving orders, answering questions, praising, informing about advantages, informing about principles. It should be emphasised that according to the discussed interpretation social competences do not have a hierarchical structure. It means that none of the component skills can determine the success in a complex social situation alone. Only a specific system of them ensures efficiency of activity [1].

Emotional intelligence (EI) is defined in various ways. The most popular of these include the ability model by Mayer, Salovey and Carus, and mixed models which were developed by *inter alia*. Goleman and Bar-On. The last assumes a definitely broader perspective – for example, in Goleman's conception EI is understood as those positive human traits which do not belong to general intelligence [17].

We based our research on the ability model. According to that conception, EI is composed of: skills to perceive and express emotions; a skill to support thinking emotionally; a skill to understand and analyse emotions, a skill to use emotional knowledge and ability to control and regulate emotions in order to support emotional and intellectual development [12].

The basis of EI is conscious regulation of emotions – managing them. A person of high emotional intelligence is characterized by openness to emotions – one's own and those expressed by other people – regardless of how pleasant or unpleasant they are, s/he can recognize and interpret them, and use the results of those activities for evaluation of information or usefulness [17]. In spite of the agent attitude, the analysis of results of the piece of research where the MEIS test (the tool which operationalized the discussed model) was used revealed the existence of the general factor of emotional intelligence [10], which justifies using a total rate while measuring EI.

In order to measure emotional intelligence self-descriptive tools or tests of abilities are used. The vulnerability of the first to conscious or unconscious distortions is recognized to be their main disadvantage. The second group are tests of abilities which also have their flaws. They are mainly accused of selection of criteria for evaluation of tasks which they include [17]. In the undertaken research the INTE test was used belonging to self-descriptive tools.

The field of human EI has been studied to a small degree. The basic questions which remain to be answered concern determining what it is (a competence, an ability or a skill), whether it changes during human lifetime and – if it does – how it changes (qualitatively or quantitatively), what connections it has with other personality constructs and skills. In our considerations we dare to formulate the thesis that it is possible to develop EI under the influence of human social experiences – including those from the field of education [11]. Moreover, we recognize it as a predictor of competences – mainly of social ones [6].

Studies of social competences and emotional intelligence of future PE teachers (university students) are rare. That is why it was decided to refer to research in that field concerning other social groups.

An interesting diagnosis of the variables we are interested in, using the same tools which are used in our study, was made by the aforementioned Martowska [6]. The author studied secondary school students aged 16-18 (M=17.18) – 300 persons – and adults aged 25-40 (M=28.78) with higher education – 232 persons. The aim of the study included, among others, researching connection between the level of social competences and emotional intelligence, on the one hand, and the course of natural social training taking place in the educational period of the researched persons' life, on the other hand.

It is interesting that the author applied the INTE test as a tool for measuring emotional competences, and not emotional intelligence, arguing that the test tasks concern evaluation of skills – and not of abilities – what seems to be an interesting and simultaneously a controversial attitude.

The analysis of results proved that there is a positive connection between the style of education by parents and social competences of the researched – the persons whose both parents applied the democratic style are characterized by the highest level of social competences. Emotional intelligence (alongside the democratic style and personal features such as temperamental activity, extrovertism and openness for experience) is a predictor of social competences. The author also suggests that emotional reactivity and neuroticism may limit and/or impede development of social competences. It was also found that the women had a higher level of competences determining dealing with intimate situations than the men – and the men had a higher level of assertiveness than the women. No differences between sexes in the field of the general level of social competences, nor in the field of competences which are necessary in the situation of social exposition were revealed. Nor were there found differences between youngsters' and adults' social competences.

M. Hen & M Goroshit researched 1st-4th year students of bachelor studies, with the social work specialisation – future health service workers dealing with mental health. A total number of 165 persons (84% of men and 16% of women) were researched. The aim of the study was to establish the influence of the special course "Being a Therapist" on the level of emotional intelligence and empathy. To measure EI the Shutte Self Report Emotional Intelligence Test was applied (its Polish version is the INTE), and – in order to diagnose the empathy level – the Interpersonal Reactivity Index. The research was carried out twice – before and after the course. The analysis of the results revealed an increase in emotional intelligence rates in the case of higher year (2nd-4th) students, whereas in the case of the 1st year students the rates had not changed. The authors also found a small correlation between the researched persons' empathy and emotional intelligence [4]. The observed changes under the influence of the training are different depending on the researched persons' level of studies and are difficult to explain.

In the study by Otrębski and Rutkowska social competences were diagnosed and emotional intelligence of 56 professionally active sports instructors aged 21-55 (31.5 on average). The same tools as in our work were applied: the SCQ and the INTE. The authors observed that the men had a significantly higher level of social competences in dealing with situations requiring assertiveness. In the field of emotional intelligence overrepresentation of high results was observed – in relation to the normalisation research – and a small positive correlation between the rate of professional satisfaction, on the one hand, and emotional intelligence and competence of dealing with situations requiring assertiveness, on the other. The authors report a need for training sports instructors in the field of social skills. They simultaneously expect that that training can be greatly beneficial regarding revealed rates of emotional intelligence in a big proportion of the researched (21.5%) [14].

The conception of our study stems from the aforesaid theoretical and empirical perspective. We researched future PE teachers – current university students. Their future work requires first of all realisation of the didactic and educational process in conditions permitting dialogue, freedom of choice and responsibility of all subjects – pupils, their parents and teachers.

The aim of the study was to establish the level of emotional intelligence and social competences of future PE teachers. The following questions were posed:

1. What is the level of the researched students' social competences?
2. What is the level of the researched persons' emotional intelligence?
3. Does sex and the level of studies differentiate rates of the researched students' social competences and emotional intelligence?

Method

The subject of the survey were future PE teachers' social competences and emotional intelligence. Two tools were applied: the INTE questionnaire and the SCQ questionnaire.

The skills constituting emotional intelligence were studied with the INTE questionnaire by Nicola S. Schutte et al in a Polish adaptation by Anna Ciechanowicz, Aleksandra Jaworowska and Anna Matczak [8]. The tool consists of 33 items which have the character of statements. A researched person was to evaluate on a scale from 1 to 5 to what degree they refer to him/her. The internal consistency of the questionnaire is satisfying. Results of factor analyses, which prove a partial correspondence of the questionnaire with the model by Salvey and Mayer, confirm the construct validity of the tool. The questionnaire was normalized for three populations: secondary school students, tertiary school students and adults aged 21-54 [9].

The SCQ is a self-descriptive tool. Its particular items are descriptions of activities. A researched person's task is to evaluate the efficiency s/he could do them with. The tool consists of three factor scales: “I” – competences determining effectiveness of behaviours in intimate situations, “SE”– competences determining effectiveness of behaviours in situations of social expositions, “A” – competences determining effectiveness in situations requiring assertiveness. Results of the study are also presented in the form of the all-in result.

The tool is reliable and valid, which is pointed out by coefficients of internal consistency of particular scales and absolute stability. It has worked out norms for secondary school students, university students and adults [8].

The distribution of the results obtained thanks to the SCQ and the INTE was analysed by the Shapiro-Wilk test. Grouping variables were taken into account: sex and the level of studies. From the results of the test that the hypothesis about abnormality of distribution should be rejected in the case of all the analysed sets except that of the subscale SCQ-I (K: $Z(70)=0.952$; $p=0.009$) and the subscale SCQ-SE (K: $Z(70)=0.956$; $p=0.016$). For the SCQ-SE the ratio of skewness to its standard error is smaller than 2 and acceptable. For the SCQ-Int. That ratio amounts to about 2.5. Hence the distribution of those variables is different from normal, they were transformed with R function = (61-X)3/4. Significance of difference was checked with variance analysis.

The researched were the 1st (bachelor studies) and the 2nd (master studies) level students of the Department of Physical Education at the University of Physical Education in Warsaw. After rejection of incomplete questionnaires 71 interviews remained with the 1st level students (3rd year) and 85 interviews with the 2nd level students (1st year). The age of the researched was from 20 to 26 – 22.21 on average. The whole researched group consisted of 156 students – 70 women and 86 men.

It should be emphasised that the researched students' pedagogical experience includes, among others, apprenticeships. These take place in a primary school (90 hours), a junior secondary school (90 hours) and a senior secondary school (50 hours). Apprenticeships in the last place are participated by students of master studies only. The study was made directly after the end of apprenticeships for the 1st and the 2nd level students – in a primary school and a junior secondary school in the first case and in a senior secondary school in the second.

Table 1. The researched in terms of their sex, year and level of studies

Year and level of studies[1]	Examined	N	%	Together
3rd year of bachelor studies N = 85	Women	35	41,18	156
	Men	50	58,82	
1st year of master studies N = 71	Women	35	49,30	
	Men	36	50,70	

[1] The chi-squared test did not revealed significant differences in numerical amount of groups which had been constructed regarding their members' sex and level of studies.

The study was made during academic classes. The respondents had been informed about the aim of the study, its anonymity and voluntary character, as well as about the way its results were going to be used. Firstly, each researched person was given the INTE questionnaire and then – after it had been filled in – the SCQ questionnaire. Each time the respondents were asked to make themselves acquainted with the instruction included in the tool.

Results of the study

Social competences come into being as a result of social training and it is justified to suppose that they grow together with gained experience. The authors decided to check whether there is a difference between the 1st level students and the master studies students regarding the level of social competences.

In literature on the subject data also exist which suggest that there are differences between sexes. Nevertheless, results of the normalization [9] were not convincing regarding that issue – the aforementioned differences were small and they appeared in an inconsistent way – and when they appeared, they were present mainly in two scales: the scale of competences determining effective functioning in intimate situations (favouring women) and the scale of competences determining effectiveness in situations requiring assertiveness (favouring men).

The variance analysis which was made did not prove the presence of statistically significant interaction effects (sex x level of studies). Hence, during further research the men's and women's results – as well as results of the students of bachelor studies and master studies – were analysed separately.

Table 2. Rates of social competences of the bachelor studies students and the master studies students

Rates	Bachelor		Master		ANOVA	
	M	SD	M	SD	F (1.152)	p
SCQ – I	46.56	5.90	45.24	7.28	*1.952*	*0.1644*
SCQ – SE	54.36	9.04	52.83	9.58	*0.459*	*0.5009*
SCQ – A	50.71	7.47	50.20	7.96	*0.248*	*0.6192*
SCQ	183.79	22.16	180.44	25.31	*0.715*	*0.3992*

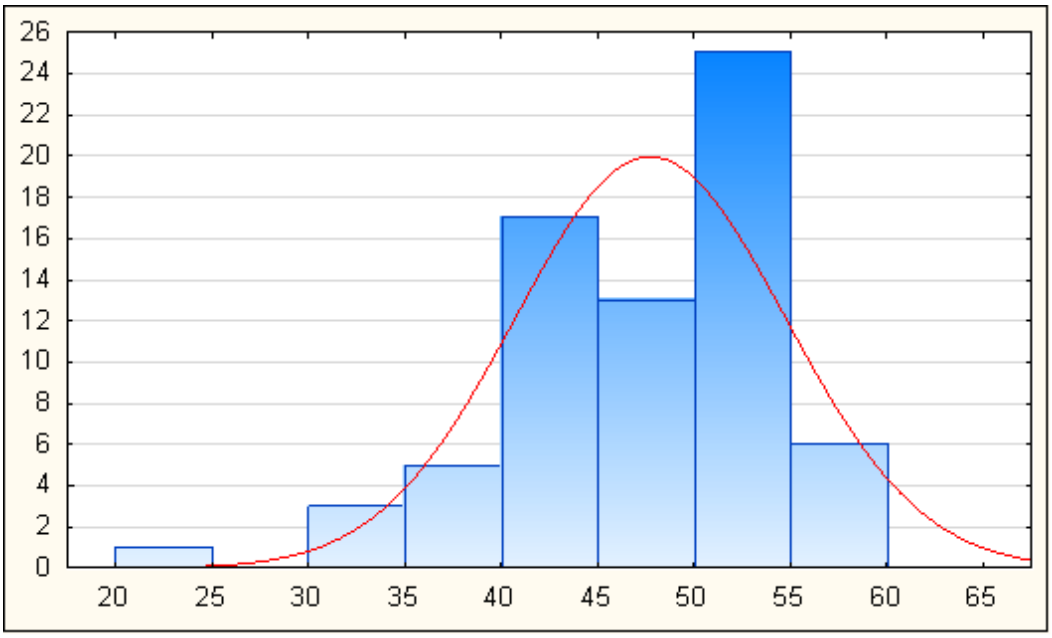
A variance analysis did not reveal any statistically significant differences between rates of social competences of the students of bachelor studies and the students of master studies. It is permitted to assume that the level of studies does not differentiate the respondents' social competences.

Table 3. The women's and the men's rates of social competences

Rates	Women		Men		ANOVA	
	M	SD	M	SD	F (1.152)	p
SCQ – I	47.59	6.99	44.63	5.93	*9.492*	*0.0025*[1]
SCQ – SE	54.83	9.19	52.72	9.33	*0.1850*	*0.6686*
SCQ – A	49.36	7.87	51.80	6.98	*3.585*	*0.0602*[2]
SCQ	184.11	24.01	180.76	23.33	*1.095*	*0.2970*

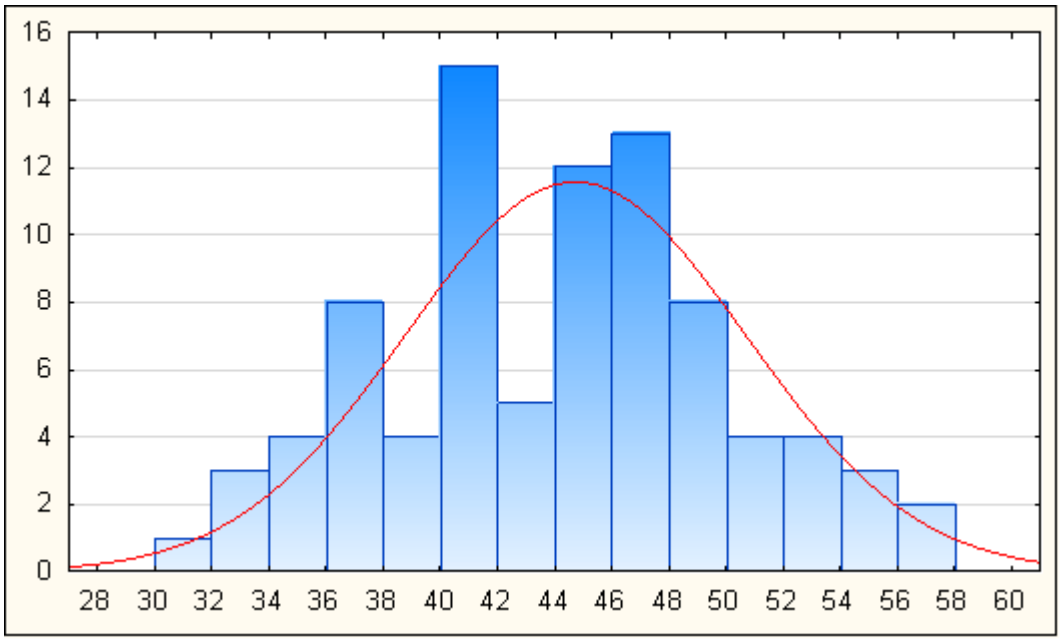
[1] Differences are significant on the level p< 0,05
[2] Differences are significant on the tendency level p<0.1

An analysis of rates of the women's and the men's general social competences did not prove significant differences between them. Regarding the distinguished subscales, it was observed that the women had significantly higher rates of competences in dealing with intimate situations, whereas the men had higher rates of competences in dealing with situations which require assertiveness. In the case of dealing with situations of social expositions no significant differences were found.



Print 1. Distribution of the women's competences in managing intimate situations (SCQ-I.)

The distribution of rates of the women's competences in managing intimate situations deserves attention (Print 1). As it has already been mentioned, it is skewed. (Shapiro-Wilk test = –0.765). It means that in the researched group there is overrepresentation of the female students with higher rates of those competences.



Print. 2. Distribution of rates of of the men's competences in dealing with intimate situations (SCQ-I.)

In the case of the men the distribution of results is normal (Shapiro-Wilk test = – 0.012).

Table 4. Rates of emotional intelligence of the researched women and men

Rate	Women		Men		ANOVA	
	M	SD	M	SD	F (1.152)	p
INTE	132.43	11,86	127.58	14.43	*5.58*	*0.0195*[1]

[1] Difference is significant for p < 0.05

An analysis of variances reveals significantly higher rates of emotional intelligence in the case of the women. The value of dispersion points to greater differentiation of the obtained rates in the case of the men.

Table 5. Rate of emotional intelligence of the students of master and bachelor studies

Rate	Bachelor		Master		ANOVA	
	M	SD	M	SD	F (1,152)	p
INTE	130.07	13,35	129,38	13,80	*0.17*	*0.6849*

No significant differences regarding rates of emotional intelligence between the bachelor studies students and the master studies students were found.

In order to evaluate the level of the diagnosed social competences and emotional intelligence we referred the obtained results to the raw data and to the sten norms obtained from the normalization research, where it had been assumed that results ranging from the 1st to the 3rd sten correspond to a low level of social competences, the 4th, 5th, 6th and the 7th sten mean an average level, whereas results ranging from the 8th till 10th sten mean a high level [5, 9].

Analysis reveals that 12.81% of the researched students have low social competences. The percentages of men and

women are the same. 54.9% of those researched have average social competences. They are had by a significantly higher rate of the men (63.96%) than of the women (40.86%). Students with the highest social competences constitute 32.96%. The percentage of the women belonging to that group is higher (44.28%) than that of the men (23.3%).

Comparison of average rates of general social competences obtained in the normalization research on a group of students of various specialisations (women M= 170.82; SD=21.09; men M=176.28; SD=22.38) revealed that they are significantly lower than those obtained in our study (women: M=184.11; SD=24.01; men: M=180.76; SD=23.33) [9]. It should be mentioned that the normalization research did not consider students of physical education departments and students of pedagogical specialisations were researched instead of them.

In the case of emotional intelligence its low level was ascertained in 12.18% of those researched . Differences between the women and the men are insignificant. The average level of emotional intelligence is manifested by 55.13% of the respondents. In the group of men such persons constitute 51.16% and in the group of the women – 59.98. High emotional intelligence was diagnosed in 32.96% of the researched – 30% of the women and 34.88% of the men.

Mean results of the normalization research on a group of students (M = 127.91; SD = 13.47) are not significantly different from those obtained in our research (M= 129.76, SD=13.56) [5].

Discussion

The paper was aimed at diagnosing emotional intelligence and social competences of future PE teachers – students of the Department of Physical education at the University of Physical Education in Warsaw.

The obtained rates of emotional intelligence prove that its level is average. Comparing them with results of the normalization research [9] and results of studies by other authors [14, 4, 6] we find that their values are not significantly different.

In our study, similarly to the works of the aforementioned authors, there were not observed any differences of emotional intelligence or social competences regarding the respondents' age, level of studies and pedagogical experience. In the case of the experimental studies which are mentioned in the paper, differences which occurred in the field of emotional intelligence under the influence of the introduced educational program (which was rather extensive) appeared only in one group of students [4]. This is quite difficult to explain. We can only speculate that the discussed dispositions – and especially emotional intelligence – develop under the influence of social training at an earlier period of life and that is the source of individual differences which later are only maintained. It seems also possible that lack of differences between researched persons of different ages and experience results from the fact that natural social training, which is an element of their life, at some stage of life is no more effective regarding further development of emotional intelligence and social competences. It is also possible to recognize the intervention of interfering variables, which appear with age. This is pointed out by Matczak when he explains finding higher rates of SC in youngsters than in adults: adults may be more critical in their self-evaluation. [9].

The observed differences favouring the women in the field of emotional intelligence are revealed also by other studies [6, 14]. Women's supremacy can be explained by both sexes' different courses of development. Girls markedly earlier than boys develop verbal communication skills. They also begin the stage of adolescence earlier and take on various social roles [15]. It is possible that their high (usually higher than in the case of boys) development activity in early years of life stimulates development of emotional intelligence, whose higher level manifests itself at later stages.

In the case of rates of general social competences, we have ascertained that those obtained in our research were significantly higher than those in the normalization research. It is possible that it results from PE students' specific experiences. Educational milieus coming into being in the area of physical culture (a sports

club, an exercising group) generate situations of intense interactions. They can be outstandingly stimulating for development of social competences of participants of activities.

Our research has revealed differences between the women and the men in the field of dealing with intimate situations (women were better) and in situations requiring assertiveness (men were better). Differences were not observed in the case of dealing with situations of social exposition. In the quoted studies, as well as in the normalization research, similar dependencies were observed – although of different intensity. Those differences can be explained by different characteristics of women's and men's social role – where intimacy and protectiveness still seem to dominate in the case of women while independence and firmness are clearly emphasised in the case of men [2]. In spite of the fact that sex in our research does not differentiate rates of the women's and the men's general social competences, different courses of social interactions during professional activities of female teachers and male teachers should be expected. The first are probably going to perform better in relations based on emotional closeness (with pupils and parents) and to be better in the realization of education tasks connected with stimulation of development of those competences in pupils. The men are probably going to be more efficient in situations requiring assertiveness.

In the case of making attempts at shaping social competences – during studies or after beginning professional activity – it seems reasonable to organize coeducational groups aimed at the common work of their participants and providing them with proper space for exchange and modelling of behaviours.

According to the conceptions of social competences and emotional intelligence which have been presented in the paper they may be recognized as key elements of a PE teacher's professional profile. Their proper development gives a chance for efficiency at work and a successful private life. Hence it seems justified to pose the question: how should development of PE teachers' social competences and emotional intelligence be stimulated?

Conclusions

1. The researched persons' level of emotional intelligence and social competences promise their success in their future work as educators in the field of physical culture and health culture.
2. There are significant differences between the researched women and the researched men concerning their ability to build social relationships. The women are more inclined to base those relationships on intimacy and the men – on assertiveness.
3. There is a need for stimulation of development of PE teachers' social competences and emotional intelligence at the stage of studies and after undertaking professional activities. Natural social training in a work environment, as well as standard classes during studies, seem insufficient for development of those dispositions. Trainings should be based on participants' experience and modelling of behaviours.

BIBLIOGRAPHY

1. Argyle M. Psychology of Interpersonal Behaviour. Warszawa, PWN 1999, p. 133 (in Polish).
2. Bem, S. L. Psychological Androgyny and Sexual Identity. In: Zimbardo P.G., Ruch F. L. Psychology and Life. Warszawa, PWN 1988 (in Polish).
3. Greenspan, S. Defining Childhood Social Competence: a Proposed Working Model. In: Keogh B. K. eds. Advances in Special Education. Greenwich, JAI Press 1981, t. 3, pp. 1–39.
4. Hen M., Goroshit M. Emotional Competences in the Education of Mental Health Professionals, Social Work Education. Taylor & Francis Group 2011, vol. 30, no. 7, pp 811-829.
5. Jaworowska A., Matczak A. Emotional Intelligence Questionnaire INTE. N. S. Schutte, J. M. Malouffa, L. E. Hall, D. J. Haggerty'ego, J. T. Cooper, C. J. Goldena, L. Dornheim. Handbook. Pracownia Testów Psychologicznych, Warszawa 2008 (in Polish).
6. Martowska K. Psychological Determinants of Social Competences. LiberiLibri, Warszawa 2012 (in Polish).

7. Matczak A. Social Competences Questionnaire. Studies in Psychology 1997 (8), p. 11 (in Polish).
8. Matczak A. (2005). Determinants of Emotional Intelligence and Socio-Emotional Competences. The Final Report on Realization the 2 H01 F 062 23 Project in the Years 2002-2005.Warszawa, 2005 (in Polish).
9. Matczak A. Social Competences Questionnaire SCQ. Handbook (the 2nd complemented edition). Pracownia Testów Psychologicznych PTP, Warszawa 2011 (in Polish).
10. Mayer J. D., Caruso D., Salovey P. Selecting a Measure of Emotional Intelligence: The Case for Ability Scales. In: Bar-On R., Parker J. D. A. eds. The Handbook of Emotional Intelligence. New York, Jossey Bass, 2000, pp. 320–342.
11. Mayer J. D., Cobb C. D. Educational Policy on Emotional Intelligence: Does It Make Sense? Education Psychology Review, 2000 (12): 163 – 183.
12. Mayer J. D., Salovey P., Caruso, D. A Further Consideration of the Issues of Emotional Intelligence. Psychological Inquiry 2004 (15): 249–255.
13. Oppenheimer L. The Nature of Social Action: Social Competence versus Social Conformism. In: Schneider B. H., Attili G., Nadel & R.P. Weissberg J. eds. Social Competence in Developmental Perspective, Dordrecht-Boston-London: Kluwer Academic Publishers, 1989 pp. 41–69.
14. Otrębski W. Rutkowska K. Sports Instructors' Social Competences. In: Francuz P., Otrębski W. eds. Studies in Psychology in the Catholic University of Lublin. Lublin, Publisher KUL, 2006, tom 13, pp. 81-98 (in Polish).
15. Przetacznik Gierowska M. Tyszkowa M. Psychology of Human Development. Warszawa, PWN, 2003 (in Polish).
16. Riggio, R. E. Assessment of Basic Social Skills. Journal of Personality and Social Psychology 1986; 51, 649–660.
17. Śmieja M. Orzechowski J. Emotional Intelligence: Facts, Myths, Controversies. In: Śmieja M., Orzechowski J. eds. Emotional Intelligence: Facts, Myths, Controversies. Warszawa, 2008, pp. 20 – 22 (in Polish).

Received: July 2013
Accepted: December 2014
Published: June 2014

Correspondence

Marcin Czechowski
University of Physical Education in Warsaw,
Address: ul. Marymoncka 34, 00-968 Warszawa
E-mail: marcin.czechowski@awf.edu.pl

Journal of Physical Education & Health, 2014, vol. 3 (5), 29-36

AN ANALYSIS OF CHANGING LEVELS OF ANXIETY EXPERIENCED BY THE PERSONNEL OF THE 25TH WINTER UNIVERSIADE COORDINATION CENTER

This article was presented at I.International Sports Economy And Management Congress between 12-15 October 2011 and was presented at Physical Education and Sports Congress 23-25 May 2013, Constanta-Romania.

Emre Belli[1], Ali Gürbüz[2], Dursun Katkat[3]

[1] Atatürk University, School of Physical Education and Sports

[2] Mimar Sinan University, Physical education and Sports

[3] Mersin University, School Of Physical Education and Sports-TURKEY

Abstract

The aim of this research is to determine the level of anxiety experienced by the personnel of the 25th Winter Universiade Coordination Center and to observe whether there is any correlation with certain demographic factors.

Spielberg State-Trait Anxiety Inventory (STAI) was implemented as pre-test and post-test on 79 women and 144 men, 223 in total working for the coordination 4 months and 4 days before the competitions, to acquire data about the levels of anxiety. Frequency analysis for the SPSS program, independent sample t-tests and one way ANOVA were applied during the statistical evaluation of the acquired data.

According to the data acquired, the study concludes that the trait anxiety level experienced by the personnel of the coordination decreased as days passed toward the beginning of the competition, and in contrast, state anxiety levels increased as the beginning of the competition approached.

Key words: *Anxiety, Winter Universiade*

Introduction

Sports have an increasing influence on people from all around the world day by day, no matter whether people take part in sports actively or passively. Sports develop parallel with the economy on a daily basis and also play an increasingly active role on the world market. New records have been broken in sports with the help of developing science and technology and the economic, technological, educational and developmental levels that sports teams and athletes represent in sports areas have begun to compete against one another.

Sport has become a symbol that represents the development level of a country [13]. The position of sports as a representative of the development level of countries has brought some psychological responsibilities to the athletes and there has arisen an urgent necessity to handle athletes as a psycho-social entity from a scientific perspective [5]. Previous studies have investigated the relationship between anxiety level and performances of athletes and they have come to the conclusion that performance alone is not sufficient for excellence in physical capacity and furthermore, psychological factors also play a great role [1]). While the psychological state of athletes affects their physical capacities and performances, the psychological state of employees working for the organization will also influence the quality of the organization. That is why the investigation of anxiety levels of employees who work for Winter Universiade is of significant value.

The term ‘anxiety’ has been one of the most frequently used words throughout human history. The term ‘anxiety’ was first used in the first half

of the century in the field of psychology and the studies related to this field were mostly conducted at the end of 1940s. Freud was the first to use this term and investigated its reasons, as well as defining the term as a concept [18]. According to Freud, anxiety functions as a factor which warns people against the threats coming from the physical or social environment, helps them fit into society and live comfortably in the world. Furthermore, anxiety at a normal level is quite necessary for people to survive [12].

Two types of anxiety were investigated in the survey, which were used to measure the anxiety levels in our study. Trait anxiety results from personal characteristics of individuals that endure over time, while state anxiety is the negative result expectation that individuals feel about any specific circumstances [17]. State anxiety has been defined as an emotional situation that leads to an increase in anxiety, fear, blood pressure and arousal level [29]. Additionally, anxiety strongly influences individuals in their lives and frequently manifests itself across various situations as a reason of maladjustment [16].

State anxiety is the emotive situation that is characterized by fear, anxiety and tender that is felt at that moment. It involves the feeling of anxiety and tension that accompany physiological stimulus. According to Spielberg, state anxiety is like a kinesthetic energy. Or, it is even the immediate reaction that occurs at the level of various violence levels [9]. State anxiety is the subjective fear that an individual feels due to the stressful situation which the individual bears [23]. Christopher[8] has defined state anxiety as " a conscious perception of the feeling of anxiety along with mental fatigue, or activation of parasympathetic nervous system or stimulus [6].

Trait anxiety, on the other hand, can be defined as an inclination of individuals to feel or interpret most situations as stressful. As is obviously understood from the term itself, this type of anxiety is stable and perpetual when compared to state anxiety which refers to temporary and uncomfortable experiences. If an individual has an inclination to feel anxiety, he/she has a greater tendency to experience more anxiety. This means that the situation differs from person to person according to the type of personality. Trait anxiety may not be obviously observed as in state anxiety. In order to observe this type of anxiety, the frequency and violence of state anxiety can be analyzed for the benefit of trait anxiety's observation 6]. Accordingly, individuals who have a high level of trait anxiety have a greater tendency to be more easily and frequently offended than those with a low level of trait anxiety and feel the state anxiety more frequently and strongly [24]. According to Matthew [19], individuals having a high level of trait anxiety either define most situations as a potential threat or risk and react accordingly; or react against threat risks more strongly than as in the state anxiety; or show both reactions.

Trait anxiety is the inclination of individuals toward their own anxiety experiences. This can be either defined as the perception of the situations that the individuals are in as stressful, or the tendency to interpret this as a stress. According to objective criteria, trait anxiety is the infelicity or dissatisfaction that stems from the perception of neutral situations as dangerous or threatening by individuals [6]. Individuals with high levels of such kinds of anxiety have a greater tendency to be easily offended and slip into a mood of pessimism. These individuals experience trait anxiety more frequently and densely than others [20].

Material and methods

The aim of this study is to determine the level of anxiety experienced by the personnel working for the 25th Winter Universiade Coordination Center and to investigate whether there is any reaction observed against some demographical factors.

This study includes 79 females and 144 males, 223 personnel in total working for the 25th Winter Universiade coordination center, chosen randomly for the study.

Spielberg State-Trait Anxiety Inventory (STAI) Scale, developed by Spielberg and his colleagues (1964), was used in the study the reliability and validity studies for which were conducted by Öner and Le Compte [23] in order to determine the state and trait anxiety level of the personnel.

This type of scale which is a kind of self-assessment includes 40 items consisting of short statements. State and trait anxiety scales are independent of each other, each consisting of 20 items. All items were given a value between 1 and 4, providing that scores of all reverse items within the scale were reversed. Total score obtained from the scale varies from 20 to 80. High score refers to high anxiety level while low score refers to low anxiety level [11].

SPSS was used and a significance level of 0.05 was accepted for the analysis of acquired data. Frequency analysis was used in order to determine the demographic features of participants and independent sample t-tests were used in order to determine their anxiety levels in terms of anxiety changes over time, gender, status and marital status. Furthermore, one-way ANOVA was used for the analysis of anxiety levels according to their education levels.

Findings

Table 1. Demographic Features of Participants

Sex	**N**	**%**
Female	79	35.4
Male	144	64.6
Marital Status	**N**	**%**
Married	44	19.7
Single	179	80.3
Status	**N**	**%**
Directors	43	19.3
Personnel	180	80.7
Educational Status	**N**	**%**
Bachelors	107	48
Postgraduates	58	26
Undergraduates	40	17.9
Elementary schools	18	8.1
Total	223	100

Table I which presents the gender distribution of participants shows that 79 females in total comprise 35.4 % of the distribution while 144 males comprise 64.4 %. When marital status is concerned, 19. 7 % of the participants are married while 80.3 % includes single individuals. Concerning the status factor, 43 participants are directors comprising 19.3% of the total number, while 180 participants are personnel comprising 80.7 %. Considering the educational backgrounds of the participants, 107 participants are bachelors comprising 48 %, 58 participants are postgraduates comprising 26 % of the total number, 40 are undergraduates consisting of 17. 9 % and lastly, 18 participants are graduates from elementary schools.

Table 2. Paired Sample T-Test Results of Anxiety Levels of Participants

Sub-Scales	**(Pre-Test) –(Post-Test)**							
	Before 4 months			**Before 4 days**			**Tests**	
	N	**Mean**	**Std.Dev.**	**N**	**Mean**	**Std.Dev.**	**t**	**p**
State Anxiety	223	40.88	9.191	223	45.83	10.132	-3,901	,000*
Trait Anxiety	223	43.83	6.962	223	38.56	9.901	-5,797	,000*

Table 2 which presents the changes in participants' anxiety levels that endure over time indicates that there is a statistically significant difference for both state (p=,000) and trait (p=,000) anxiety levels (p<0,05).

Accordingly, concerning state anxiety, anxiety level of participants 4 months to

universiade (X=40,88 ±9,191) are lower than those of 4 days to universiade (X= 45,83± 10.132).

In terms of trait anxiety of the personnel, their anxiety level 4 months to the opening of universiade (X=43,83±6,962) is higher than that of those 4 days to the opening of universiade (X=38,56±9,901).

Table 3. Independent Sample T-Test Results of Gender Differences

Sub-Scales	Sex	Time	$\overline{X}$	s.d.	t	p
State Anxiety	Male (N=144)	before 4 months	39.23	11.132	-3,901	,132
	Female (N=79)		38.76	9.135		
	Male (N=144)	before 4 days	45.93	7.421	-1,146	,106
	Female (N=79)		44.12	4,123		
Trait Anxiety	Male (N=144)	before 4 months	44.54	8.801	-5,797	,194
	Female (N=79)		43.12	8.801		
	Male (N=144)	before 4 days	39.13	6.912	-2,345	,245
	Female (N=79)		38.11	6.912		

*(p<0,05)

Table 3 presents the gender differences among participants according to state and trait anxiety levels and it shows that there is not a statistically significant difference between the pre-test that was administered 4 months to the universiade and the post-test administered to participants 4 days to universiade (p>0,05).

Table 4. Independent Sample T-Test Results of Participants in Terms of Marital Status

Sub-Scales	Marital Status	Time	$\overline{X}$	s.d.	t	p
State Anxiety	Married (N=44)	before 4 months	40.76	4,849	-1,231	,222
	Single (N=179)		41.23	2,779		
	Married (N=44)	before 4 days	44.19	2,244	-1,114	,342
	Single (N=179)		45.63	3,687		
Trait Anxiety	Married (N=44)	before 4 months	42.02	6,198	-5,216	,413
	Single (N=179)		43.44	5,067		
	Married (N=44)	before 4 days	37.01	5,021	-2,476	,294
	Single (N=179)		38.03	2,613		

*(p<0,05)

When we look at the marital status of participants, there is not a statistically significant difference in the results of the pre-test 4 months to universiade and the post-test 4 days to universiade in terms of trait and state anxiety (p>0,05).

Table 5- Independent Sample T-Test Results of Participants in Terms of Status

Sub-Scales	Status	Time	$\overline{X}$	s.d.	t	p
State Anxiety	Directors (N=43)	before 4 months	41.19	2,112	-2,118	,637
	Personnel (N=180)		40.37	3,395		
	Directors (N=43)	before 4 days	40.99	4,145	-1,446	,292
	Personnel (N=180)		39.82	1,687		
Trait Anxiety	Directors (N=43)	before 4 months	40.02	2,978	-4,367	,373
	Personnel (N=180)		39.59	5,344		
	Directors (N=43)	before 4 days	39.14	5,222	-3,245	,119
	Personnel (N=180)		39.03	3,139		

*(p<0,05)

According to t-test results in terms of participants' status, there is not a statistically significant difference between pre-test 4 months to universiade and post-test 4 days to universiade in terms of state and trait anxiety levels (p>0,05).

Table 6. Independent Sample T-Test Results of Participants in Terms of Educational Status

Sub-Scales	Educational Status	Time	$\overline{X}$	s.s	f	p
State Anxiety	Bachelors (N=107)	before 4 months	41.19	5,158	-2,118	,065
	Postgraduates (N=58)		39.99	2,389		
	Undergraduates (N=40)		41.34	3,892		
	Elementary School (N=107)		42.06	6,598		
	Bachelors (N=107)	before 4 days	44.67	4,198	-3,859	,112
	Postgraduates (N=58)		43.99	4,569		
	Undergraduates (N=40)		45.99	2,758		
	Elementary School (N=107)		46.01	3,004		
Trait Anxiety	Bachelors (N=107)	before 4 months	45.13	8,358	-1,452	,164
	Postgraduates (N=58)		45.32	2,709		
	Undergraduates (N=40)		44.99	2,345		
	Elementary School (N=107)		44.45	2,123		
	Bachelors (N=107)	before 4 days	42.22	8,901	-2,132	,231
	Postgraduates (N=58)		42.44	3,528		
	Undergraduates (N=40)		41.79	5,123		
	Elementary School (N=107)		41.89	1,283		

*(p<0,05)

According to Table 6, there is not a statistically significant difference between the results of the pre-test 4 months to universiade and the post-test 4 days to universiade in terms of state and trait anxiety levels (p>0,05).

Discussion and results

The present study, which investigates changes of anxiety levels of personnel working for the 25th Winter Universiade coordination center over time implies the following conclusions:

According to the findings, state anxiety levels 4 months to universiade (X= 40,88 ±9,191) are lower than those of 4 days to universiade (X= 45,83 ±10,132). Considering that state anxiety is an emotive situation characterized by fear, worry and tension, the increase in state anxiety may stem from the fact that some problems may arise before the opening of the universaide and there was little time to the universiade in order to solve them, thereby causing uneasiness.

On the other hand, trait anxiety seems to be higher 4 months to universiade (X= 43,83

±6,962) than that of 4 days to universiade (X= 38,56 ±9,901). Taking into consideration that trait anxiety refers to the situations within which individuals live as stressful or the inclination to interpret this, trait anxiety stems from the fact that participants want to overcome the stressful situation as time passes approaching the opening of the winter universiade.

The findings of the present study, which also investigates the anxiety levels in terms of gender differences, show that there is not a statistically significant difference. In the studies of Üngören [28] on the high school and university students from the field of Tourism Education and Doğan and Çoban [10] on the university students in the faculty of Education, the researchers did not find a statistically significant difference between gender and anxiety. Ocaktan et. al. also did not find any significant differences between them in their study with health personnel working at the Health center. Furthermore, the studies in literature have not found any statistically significant difference between gender and anxiety are as follows:[4, 27, 14]. These findings support the findings of the present study. However, there are also other studies that conclude significant difference in terms of gender differences and they are as follows:[11, 7, 26, 15]. Their findings are in contrast to the findings of the present study.

In terms of the marital status of participants with regards to anxiety levels, no significant difference was revealed. Despite the non-significance in terms of marital status, single individuals seem to have higher state and trait anxiety when compared to married ones. The studies of [25,3,2] also support the finding of the present study. This finding may result from the fact that single participants have greater goals for the future and married participants do not have regular life styles when compared to those who are single.

Another finding of the present study in terms of participants' status with regards to anxiety level, is that no significant difference was revealed. Even though there was not a significant difference in terms of status, administrators tended to feel more anxiety than other participants. This may stem from the fact that these types of personnel have more responsibilities and they are also responsible for those working under them. Therefore they feel more anxiety.

According to the findings of the present study, there was not a statistically significant difference in terms of educational background. However, while educational levels decreased state anxiety levels increased. The fact that those with low educational levels have less self-esteem as they are given a heavy load of work may lead to difficulties for them, even though they have fewer responsibilities when compared to those with high educational levels. Moreover, the fact that those with low educational levels work in lower positions and they are controlled by supervisors may even cause anxiety.

Erzurum 25th Winter Universiade which is among the greatest organizations realized in our country, Turkey, has had personnel who took charge of all kinds of responsibilities and played a significant role during the candidacy process for the Olympics and recognition of Turkey. Because of this reason, it is of significant value to investigate the anxiety levels of personnel working for 25th Winter Universiade Coordination, as their performances directly affect the organization. The lower the anxiety level is, the higher the performance is. That is why apart from enhancing physical conditions such as wages,working conditions, development and etc., the psychological situations of personnel should also be taken into consideration.

BIBLIOGRAPHY

1. Akarçeşme, C. (2004). Voleybolda Müsabaka Öncesi Durumluk Kaygı İle Performans Ölçütleri Arasındaki İlişki, Yüksek Lisans Tezi, Gazi Üniversitesi Sağlık Bilimleri Enstitüsü, Ankara.
2. Akdemir, A., Cinemre, B. (1996) Sosyal fobi: epidemioloji, eşlik eden hastalıklar, klinik gidiş, prognoz. Psikiyatri Psikoloji Psikofarmakoloji Dergisi, 4:11-17.

3. Amies, P.L., Gelder, M.G., Shaw, P.M., ve ark. (1983) Social phobia: a comprative clinical study. Br J Psychiatry, 142:174-179.
4. Arslan, Ç. (2007), "Üniversite Öğrencilerinin Sürekli Kaygı ve Kişisel Kararsızlık Düzeylerinin İncelenmesi", Yayınlanmamış Yüksek Lisans Tezi, Selçuk Üniversitesi Sosyal Bilimler Enstitüsü, Konya.
5. Başaran , H.M., Taşğın , Ö., Sanioğlu, A., Taşkın, K.A. (2009). Sporcularda Durumluk ve Sürekli Kaygı Düzeylerinin Bazı Değişkenlere Göre İncelenmesi, Selçuk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi S.21,SS.534.
6. Bezek, N.T. (2008) TBL (Türkiye Erkekler Basketbol Birinci Ligi)'deki Basketbolcularda Performans Kaygı İlişkisi, Selçuk Üniversitesi Sağlık bilimleri Enstitüsü Yüksek Lisans Tezi, Konya.
7. Ceyhan, A. A. (2004), "Ortaöğretim Alan Öğretmenliği Tezsiz Yüksek Lisans Programına Devam Eden Öğretmen Adaylarının Umutsuzluk Düzeylerinin İncelenmesi" Sosyal Bilimler Dergisi, 2004/1, ss.91-102.
8. Christopher. M.J. (2002). Anxiety arousal and visual attention: amechanistic account of performance variability, Depertment of Exercise and Sport Sciences, Universty of Florida, USA.
9. Cox, H.R. (1990). Sport Psychology Concepts and Applications, Brown Publishers, ss.212,USA.
10. Doğan, T., Çoban, A.E. (2009), "Eğitim Fakültesi Öğrencilerinin Öğretmenlik Mesleğine Yönelik Tutumları ile Kaygı Düzeyleri Arasındaki İlişkinin İncelenmesi", Eğitim ve Bilim, Cilt 34, Sayı 153, ss.157-168.
11. Dursun, S., Aytaç, S. (2009). Üniversite Öğrencileri Arasında İşsizlik Kaygısı, Uludağ Üniversitesi İktisadi ve idari Bilimler Dergisi,Cilt:28, s.1, s.s.75.
12. Geçtan, E. (1999). İnsan Olmak. 20. Basım, Remzi Kitabevi. İstanbul.
13. Gümüş, M. (2002). Profesyonel Futbol Takımlarında Puan Sıralamasına Göre Durumluk Kaygı Düzeylerinin İncelenmesi, Yüksek Lisans Tezi, Sakarya Üniversitesi Sosyal Bilimler Enstitüsü, Sakarya.
14. Genç, H. (2008), "Gazi Üniversitesi Gazi Eğitim Fakültesi Güzel Sanatlar Eğitimi Bölümü Resim-İş Eğitimi Anabilim Dalı Öğrencilerinin Kaygı Düzeyleri Üzerine Bir Durum Çalışması", Yayınlanmamış Yüksek Lisans Tezi, Gazi Üniversitesi Eğitim Bilimleri Enstitüsü, Ankara.
15. Ghaderi, A.R., Venkatesh Kumar, G.; Sampath K. (2009), "Depression, Anxiety and Stress among the Indian and Iranian Students", Journal of the Indian Academy of Applied Psychology, January 2009, Vol. 35, No.1, pp. 33-37.
16. Jeffry R. S. (2003) Use and abuse of academic examinations in stress research, Psychosomatic Medicine, 65, pp.1055–1057.
17. Kapıkıran Ş. (2002) Üniversite öğrencilerinin sınav kaygısının bazı psiko-sosyal değişkenlerle ilişkisi üzerine bir inceleme, Pamukkale Üniversitesi Eğitim Fakültesi Dergisi, Sayı:11, s:34-43.
18. Köknel, Ö. (1988). Zorlanan İnsan, 2. basım, Altın Kitaplar Yayınları, İstanbul.
19. Matthew, A.P., Harwood, C. (2006) The performance environment of the England youth soccer teams, School pf sport and exercises sciences, Loughborough Universty, UK.
20. Shoen Ferld Rr (1993) Dimensions anxety and their effects on an aspect of the performance process comıssions of the menter arousal, Universty of Sundiago, USA.
21. Ocaktan, E.M., Keklik, A., Çöl, M. (2002). Abidinpaşa Sağlık Grup Başkanlığı'na Bağlı Sağlık Ocaklarında Çalışan Sağlık Personelinde Spıelberger Durumluk ve Sürekli Kaygı Düzeyi,Ankara Üniversitesi Tıp Fakültesi Dergisi,C.55,S.1,ss.21-28.Ankara
22. Öner, N., Le Compte, A. (1983). Durumluk-Sürekli Kaygı Envanteri El Kitabı, Boğaziçi Üniversitesi Matbaası, 1 Baskı, İstanbul.
23. Özgür, G. (1984) Ege Üniversitesi birinci sınıf öğrencilerin klinik uygulaması kaygı düzeylerin incelenmesi, Ege Üniversitesi Sağlık Bilimleri Enstitüsü yüksek lisans tezi, İzmir.
24. Schneier, F.R., Johnson, J, Hornig C.D., ve diğ.(1992) Social phobia: comorbidity and morbidty in an epidemiologic sample. Arch Gen Psychiatry, 49:282-288.
25. Şahin, C. (2009), "Eğitim Fakültesinde Öğrenim Gören Öğrencilerin Umutsuzluk Düzeyleri", Selçuk Üniversitesi, Ahmet Keleşoğlu Eğitim Fakültesi Dergisi, Sayı:27, ss.271-286.
26. Tümerdem, R. (2007), "Dicle Üniversitesi Eğitim Fakültesi ve Fen-Edebiyat Fakültesi Kimya Son Sınıf Öğrencilerinin Kaygılarını Etkileyen Etmenler" Elektronik Sosyal Bilimler Dergisi, ISSN:1304-0278 Bahar-2007 C.6 S.20 (32-45). www.e-sosder.com.
27. Üngüren, E. (2007). "Lise ve Üniversitelerde Turizm Eğitimi Alan Öğrencilerin Umutsuzluk ve Kaygı Düzeylerinin Çeşitli Değişkenler Açısından Değerlendirilmesi: Antalya'da Bir Uygulama", Yayınlanmamış Yüksek Lisans Tezi, Akdeniz Üniversitesi Sosyal Bilimleri Enstitüsü, Antalya.
28. Zeng H. Z., Leung R. W., Lıu W. (2008). An examination of competitive anxiety and self-confidence among college varsity athletes, Journal of Physical Education & Recreation, Vol.14 No.2, pp: 6-12.

Received: November 2013
Accepted: March 2014
Published: June 2014

Correspondence

emre.belli@atauni.edu.tr
ali.gurbuz@msgsu.edu.tr
dkatkat@atauni.edu.tr

Journal of Physical Education & Health, 2014, vol. 3 (5), 37-40

DIFFERENTIATION AND INTEGRATION OF KNOWLEDGE IN THE FORMING OF THE PSYCHOLOGICAL – PEDAGOGICAL COMPETENCE OF A FUTURE TEACHER OF PHYSICAL TRAINING

Anna Chepelyuk

Drogobych State Pedagogical University named after Ivan Franko

Abstract

The peculiarities of integration and differentiation of knowledge in the forming of the psychological – pedagogical competence of a future teacher of physical training are outlined in the following article. The pedagogical methods of providing differentiation and integration of knowledge and abilities are distinguished and psychological methods in the forming of the psychological – pedagogical competence of future teachers of physical culture are examined in this article.

Key words: *differentiation, integration, knowledge, teacher, physical culture, ways, forming, pedagogical, psychological competence.*

Introduction

The main task of the higher education institute is the training of a specialist for his future professional activity, namely the formation of necessary competence, and one of the means of this formation is the integration and differentiation of subjects.

Integration and differentiation can solve the main task of education - the contradiction between a large amount of knowledge and limited human resources.

Integrated education causes new conditions in the activity of both teachers and students, and is a component of the activation of intellectual activity. It is important to note, that integration and differentiation require innovative forms and methods of education which have a big influence on the effectiveness of the perception of educational material by students. That is why there arises a necessity to determine psychological – pedagogical competence concerning students as future teachers of physical training.

Analysis of research and publication

In scientific works (T. Archipova [2], L. Deminska [4] and others) the question of intersubject contact in the process of the professional training of a teacher is illuminated.

The formation of organizational, communicative, speech and pedagogical abilities of teachers of physical training was investigated by M. Stankin [7], in his scientific works, the determination of the stepwise system of training of teachers of physical training was considered by the following scientists: V. Volkow [4], U. Shkrebtij [9] and others.

The usage of new educational technologies (O. Aksionova [1], A. Chornoshtan [8]) has a great positive influence on the quality of the professional training of future teachers of physical training.

Analysing the psychological – pedagogical literature we have come to the conclusion, that an integrative approach is one of the most determinative in the psychological – pedagogical competence of a future teacher of physical training and requires consideration.

The purpose of the research is to determine peculiarities and meaning of

integration and differentiation of knowledge in forming psychological – pedagogical competence of a future teacher of physical training.

Results of research

The question of the importance of intersubject ties in the process of the formation of psychological – pedagogical competence of future teachers of physical training requires a consistent solution. It is necessary to create optimal conditions in the realization of a professional – pedagogical cycle of discipline [4].

According to V. Volkovthe success of a professional activity of a future teacher of physical training is determined by a high level of development of abilities, which requires theoretical knowledge and practical skills. Each of these abilities is concrete and is evaluated only by the professional activity of a teacher of physical training [3].

That is why it is reasonable to use the subject approach to the formation of knowledge of students, which is motivated by the integrative character of training and education process in physical training.

Investigation of the effectiveness in usage of the integrative approach in the process of psychological – pedagogical education of future teachers of physical training results in the renewal of conceptual, theoretical and technical principles, which should meet modern achievements in the sphere of psychology and pedagogics.

The educational process in the higher education establishment should be organized on the principles of humanistic pedagogics, which is oriented towards the development of the personality of a future teacher, able to integrate knowledge, and use it effectively for the purpose of professional self- realization.

It should be noted that reconstruction of the existing system of education is a scientifically grounded integration of knowledge, in close cooperation with its differentiation.

Despite the strengthening of the integrative process at the present stage, the search for cognitive means is becoming widely spread. Together with differentiation, integration plays an important role in the system of physical education. Differentiation and integration move in opposite directions and at different historical stages one or another method dominates. However, the process of integration and differentiation are subordinated to their own specific laws, performing a function which is specific to each of them within the boundaries of social knowledge [5].

According to our own point of view, educational targets of integration of knowledge should be directed to the formation of integral system of the knowledge of students – future teachers of physical training. The introduction of the integrative process helps to solve a number of important methodical tasks. Interaction of psychological and pedagogical knowledge will give an opportunity to the students to work out the models of psychological – pedagogical situations during the lessons of physical training. Integration of knowledge helps to form the stable competence of a future teacher of physical training necessary for qualitative realization of the educational process concerning physical training in a higher education establishment.

It is important to take into consideration the systematic acquisition of the psychological and pedagogical knowledge of students, their skills in choosing the most effective methods of work for the resolution of model situations. The solution of problems of motivation of knowledge with the help of physical exercises is a necessary condition for the forming of psychological – pedagogical training of a future teacher of physical training.

The integrative approach in physical education is aimed at the realization of main functions namely at formation and the correction of a holistic system of psychological – pedagogical knowledge.

According to out point of view, requirements to the creative thinking of a personality are also very important which are caused by the fact that a majority of practical tasks which a teacher of physical training should constantly decide, require the ability to use psychological-pedagogical knowledge systematically and in an integrated manner: to implicate, combine and systematize a great number of different components of pedagogical and psychological knowledge .

Integration in an educational process, except for specific didactic peculiarities, has general patterns and relationships which exist between scientific knowledge. Consideration of these reguliarities should be taken into consideration already at the first stages of the forming of psychological – pedagogical competence of students at the faculties of physical training.

All the elements of the integrative system are interconnected and form a certain structure (there can be a number of such systems, depending on the aim of the formation of a system). The main feature of such a system is that the division of an educational material occurs not outside but inside the didactical system.

To ensure continuity and integration of knowledge and skills in the forming of competence of future teachers of physical training, the main pedagogical approaches are identified with the help of defined methods:

– role plays during the lessons of sport games,
– front education during modules in gymnastics,
– circle training during a module of track and field athletics.

Along side this, the ways of forming the psychological competence of a future teacher of physical training are defined, which have the following components:

– group educational activity,
– work in small groups,
– work in pairs,
– methods of autogenic training,
– modeling of "situation of success",
– plot role games,
– psychological components in the evaluation of acquired knowledge by students.

The above proposed psychological and pedagogical ways will help in the effective formation of knowledge and abilities of students necessary for conducting of lessons of physical training in an educational establishment.

Control of the teachers of pedagogics and psychology in collaboration with the worked out models during the practical lessons in sport disciplines will promote deep and wide learning of educational material, which in turn will give the possibility of evaluating the level of pedagogical and psychological competence of students. It will provide a positive result of work for the future teacher, for the effective conducting of lessons of physical training.

In our opinion, the psychological – pedagogical training of a future teacher of physical training should be carried out on the basis of a method of competence motivated by our specific aims and tasks.

Therefore, the effectiveness of a professional activity of a teacher of physical training depends on the level of competence training. The main factor of success in the professional activity of a teacher of physical training it is an ability to make decisions independently. In the professional activity, prognostication of positive and negative results helps in the educational process of physical training, making proposals to the educational programmes, elaboration of educational – methodical programmes and projects in the process of education in a higher educational establishment.

In our opinion, combining of the integrative approach facilitates the integrity and continuity of a psychological – pedagogical training and of differentiative approach (facilitates the quality of psychological – pedagogical training) and is one of the effective means of the raising of the effectiveness of a psychological – pedagogical training of a future teacher of physical training in a higher educational establishment.

Analysing knowledge and skills of future teachers of physical training, we have come to the conclusion that:

- pedagogical competence of a teacher of physical training lies in the possession of knowledge and skills, the basics of the pedagogics of physical training (aims, principles, context, forms, methods, means of educational activity in a higher educational establishment); means and methods of professional – pedagogical activity; basics of pedagogical skills; by different forms of pedagogical influence on a personality. On the basis of this knowledge: we should use methods of effective organization of activity of pupils in the educational process of a school, analyse educational situations, determine and solve pedagogical problems, conduct analytical research, scientific – pedagogical and practical activity.

- psychological competence of a teacher of physical training is based on possession of knowledge and skills: the main patterns of development of personality: main psychological functions and their psychological arrangements: understanding of the meaning of will and motives and also of unconscious mechanisms in the behavior of a person, age and individual peculiarities of a person: methods of psychological – pedagogical diagnostics in the development of children of different ages and their environment.

On the basis of this knowledge: give the psychological characteristics of a pupil (his temperament, abilities); give the interpretation of his own psychological state; possess the simplest methods of mental self – regulation; provide psychological aid to pupils; address the psychological impact on pupils, who are in crisis and in conflict situations.

Conclusions

Appliance of integrative and differentiative approach in the formation of psychological competence of students of faculties of physical training promotes more effective assimilation of knowledge and skills concerning psychological – pedagogical disciplines. Application of the given approaches makes it possible to identify ways of creating psychological and pedagogical competence for conducting lessons of physical training.

BIBLIOGRAPHY

1. Aksionova O. (2007). Interactive forms of activity of pupils during the lessons of physical training. Physical training, 6.
2. Archipova L.P. (2007). Forming of ecological – valeontological readiness of teachers in the system of interschool constant raising of quality: Autoreport of a candidate of ped. science: 13.00.01. Cheliabinsk University, Cheliabinsk.
3. Volkov V. L. (2008). The basis of theory and methods of physical training of a student youth. – K.: Education in Ukrain.
4. Deminska L. O. (2004). Intersubject ties in the process of a professional training of future teachers of physical training: Autoreport dis. Lugansk, Lughansk State Taras Shevchenko University.
5. Kozlowska I. (2001). Stepwise integration in the development of the context of educational knowledge: methodological aspect. Uninterrupted professional educational: theory and practice: Collection of scientific papers, 2.
6. Pometun O. I. (2004). The theory and practice of stepwise realization of a competent approach in the experience of foreign countries. Contempt approach in modern education: world experience and Ukrainian perspectives. Library of educational politics. K.: K.I.S.
7. Stankin M. I. (1987). Psychological – pedagogical basis of physical training. M.: Prosveshchenije.
8. Chornoshtan A. G. (2002). Professional training of future teachers of physical training on the basis of module – rating technology: Autoreport dis. for the degree of Candidate of Pedagogical Sciences: spec. 13.0.04. – Lugansk.
9. Shkrebtij U. M. (2005). Sport legislation of foreign countries and perspectives of improvement of system of physical culture and sports in Ukraine (Legal basis of physical culture and sports in Ukraine). Theory and methods of physical training, 1.

Received: July 2013
Accepted: January 2014
Published: June 2014

Correspondence

Anna Chepelyuk
Vushneva street, 10
Drogobych 82100
Lviv region, Ukraine
fillvitalij@rambler.ru

Journal of Physical Education & Health, 2014, vol. 3 (5), 41-46

ASSESSMENT OF THE RESERVE CAPACITY OF THE EXTERNAL RESPIRATION APPARATUS OF STUDENTS OF DIFFERENT SPORT SPECIALIZATIONS

Iryna Kopko, Vitaliy Fil

Drogobych State Pedagogical University named after Ivan Franko

Abstract

This article is devoted to the functional analysis of the external respiration apparatus of students of different sports specializations. It examines the level of functional reserves of external respiration apparatus according to indices of power, mobilization and economical efficiency of male football players and athletes – above average – and of female football players and athletes – average. The assessment of the reserve capacity of external respiration apparatus may be used in the construction of the training process and will assist in the professional selection and sports orientation of students of the faculty of physical education.

Key words: *external respiration, spirography, the power reserve, the mobilization reserve, the economization reserve, football, field athletics.*

Introduction

Research of the functional state of the external respiration system is one of the principal elements of the program of medico-biological control on the state of health of human beings who are regularly engaged in physical training. It is linked with the enormous role of the respiration system in the human body's adaptation to various types of physical obligations [2]. Aerobic productivity (especially in cyclical sports) is one of the most important factors that defines the working capacity and exercise tolerance of sportsmen. The level of aerobic productivity depends on the system of oxygen supply to the human body – the functional respiration system, which supplies oxygen from the environment to the acting tissues and performs the external respiration function, the function of gas transportation by blood (which is provided by the function of the blood circulating system) and the tissue respiration function [13]. The sportsman's body constantly experiences increasing mental and physical obligations, which influence the state of the functional respiration system that supplies the body with oxygen necessary for muscle activity. The external respiration system limits the working capacity of the body to a considerable degree under the intensive obligations [1].

Analysis of recent research and publications

The increase of this problem in research during the last years has been caused by the necessity of appraising objectively the functional state and reserve possibilities of external respiration mechanism among children and teenagers involved in sport and by the drop in the state of health indices of various age groups. A considerable number of works are dedicated to the appraisal issue of reserve possibilities of external respiration of students due to the data of computer spirography. Namely, N. Moskalenko and others devised the criteria of appraisement of reserve possibilities of external respiration of students [3]; E. Yevdokimov [5], I. Kotsan and others [7], investigated the peculiarities of external respiration apparatus under physical pressures and during the post pubertal period of ontogenesis; a number of scientists devised the model characteristics of functional state of the respiration system of karateka students [2], researched the indices of the respiratory system

of playing sports representatives, field athletes and cyclists [2-8, 10, 11].

However, to our mind, the issue of appraising the reserve possibilities of external respiration and the issue of improving the interpretation of the results of researches dedicated to the improvement of the planning of training process concerning pupils and students are studied insufficiently.

The research is carried out according to the plan of scientific research of the department of anatomy, physiology and valeology of Drogobych State Pedagogical University named after Ivan Franko.

Purpose: to summarize the scientific and methodical literature and data in the sphere of external respiration research of sportsmen. To analyze the basic indices of external respiration and its reserve possibilities that characterize the functional state of the respiration system of students with different sport specializations.

Materials and methods

The following methods were used for this research: analysis and generalization of scientific and methodical literature, and spirography. The research was carried out according to the base of the department of anatomy, physiology and valeology of Drogobych State Pedagogical University named after Ivan Franko. 30 students (18-19 years of age) of Drogobych State Pedagogical University named after Ivan Franko took part in the experimental research. The spirography indices were determined in the dominant equilibrium before the training activities. The computer-based complex “Micro QUARK” was used in order to appraise the functional state of external respiration of sportsmen. Through the method of spirography the following principal indices of external respiration mechanisms were defined: tidal volume (TV), respiration rate (RR), low voluntary ventilation (LVV), inspiratory reserve volume (IRV), vital capacity (VC), vital ratio (VR), forced vital capacity (FVC), peak expiratory flow (PEF), index Tiffani (FEV1/VC) and maximal voluntary ventilation (MVV). The majority of authors use these indices to analyze the functional state of external respiration apparatus. Each of the spirographic indices was compared with its predicted values, which were calculated with the formulae proposed by Y. Boldin depending on sex, age, stature and weight. The received data parameters were shown in predicted percentages.

The analysis of the received data was carried out with the help of computer programs “Microsoft Excel 2007” and “Statistics 6”.

Results and discussion

Nowadays the majority of scientists consider VC to be one of the most important indices of the functional state of the external respiration system. VC also depends on sex, age, stature and the level of physical conditioning [1, 7]. The received data affirms the VC index of examined footballers is 5,068±0,18 l.; field athletes – 5,22±0,44 l. (tab.1), runners – 4,22±0,76 l. [5] and volleyball players – 4166,9±98,6 ml. [4], which corresponds in fact to the VC value of qualified football players and – 5,08±0,49 l. [5]. Female VC index 3,264±0,2 l. for football players and 3,451±0,13 l. for field athletes and exceeds the indices of female field athletes according to I. Kotsan’s data [7].

Table 1. External respiration indices of sportsmen of different specialization

	Male		Female	
	Football players (n=9)	Field athletes (n=6)	Football players (n=7)	Field athletes (n=8)
VC, l	5,06 ± 0,18	5,22 ± 0,44	3,26 ± 0,2	3,45 ± 0,13
ERV, l	1,75 ± 0,12	2,07 ± 0,12	1,22 ± 0,15	1,27 ± 0,11
IRV, l	2,6 ± 0,16	2,33 ± 0,35	1,48 ± 0,12	1,55 ± 0,13
TV, l	0,71 ± 0,05	0,8 ± 0,09	0,55 ± 0,08	0,62 ± 0,07
RR, per1 min	13,4 ± 0,34	12,5 ± 0,74	15,4 ± 0,45	14,6 ± 0,34
VR, ml/kg	73,89 ± 2,56	77,96 ± 4,56	57,11 ± 5,38	57,63 ± 1,89
MVV, l/min	145,88 ± 9,43	142,28 ± 14,18	82,62 ± 7,72	106,25 ± 5,37

TV MVV, l	0,815±0,11	1,088±0,2	0,47±0,05	0,7±0,04
weight, kg	68,89±2,43	66,67±2	58,28±2,7	53,4±7,19
stature, cm	176,4±1,09	176±1,8	160,85±1,55	167,25±2,4

To our mind, such differences from other authors require the development of the standards of predicted values, taking into account anthropometric data, length of service, mean of sport and sport qualification. That in return will cooperate in individual approach to training processes. One of the VC components is IRV, which accordingly in researched groups was: 2,6±0,16 l; 2,3±0,35 l; 1,487± 0,12 l; 1,55±0,13 l (tab.1).

The calculation of VR is considered to be a more informative index than VC calculations. The VR average values are 60 ml/kg for healthy males, 50 ml/kg for females, 68-70 ml/kg for male sportsmen, 57-60 for female sportsmen [9]. During the research it was found that the average VR index for male sportsmen (football players and field athletes) was: 73,89 2,56 ml/kg; 77,96 4,56 ml/kg, for female sportsmen – 57,11±5,38 ml/kg; 57,63 1,89 ml/kg accordingly. The results of the research prove the assumption about the positive changes of the static vital capacity as a consequence of sports activities, as far as the gained VR and VC values of sportsmen are higher than the values of non-exercising people.

To our mind, the received high VC value of sportsmen, apparently, is a result of adaptive changes of the respiration system (especially of males) because of years of sports training. According to the data of many authors [12, 13] the VC increase leads to the increase of respiration economization and the diffusive area of lungs. The increase of functional capacity of respiration muscles ensures the creation of a respiration current of high power. According to N. Moskalenko [3] the premises may be used as the indices of power reserve (of vital capacity (VC) values) and inspiratory reserve volume (IRV). Our researches showed that the high level of VC values was observed in males only. But, having analyzed the percentage of the VC indices to the predicated VC indices, we found out that VC value on average is 112,11±3,96% for male football players and 116,38±9,49% for male field athletes, which corresponds to a high level of power reserve (tab. 2). Accordingly, the VC indices for females are: 102,28±+6,925%; 103,28±3,38%. The highest VC indices are observed in sportsmen who have a high level of exercise tolerance and the highest cardio respiratory productivity.

Table 2. Predicted values of external respiration apparatus of sportsmen

	Male		Female	
	Football players (n=9)	Field athletes (n=6)	Football players (n=7)	Field athletes (n=8)
pVC, ml	4519,09±21,56	4488,31±46,64	3197,28±35,01	3338,06±52,19
VC/pVC, %	112,11±3,96	116,38±9,49	102,34±6,92	103,28±3,38
pTV, ml	903,82±4,31	897,66±9,32	639,45±7,01	667,73±9,59
ERV, l	1,75±0,12	2,075±0,12	1,22±0,15	1,27±0,11
pERV, ml	1358,73±6,46	1346,49±13,99	959,18±10,5	1001,6±14,38
pIRV, ml	2259,54±10,78	2244,15±23,32	1598,64±17,7	1669,3±23,97
IRV, %	114,92±6,99	103,84±15,17	93,46±8,05	93,26±8,24
pMVV, l	112,46±1,52	111,07±2,12	98,79±1,48	103,09±2,30
MVV, %	126,44±7,43	127,65±11,26	84,02±8,39	93,28±8,24

Mobilization reserves determine the ability of the human body to mobilize the available morphofunctional resources of the respiration apparatus and realize them on a level with the maximal consumption of oxygen. We used the maximal voluntary ventilation (MVV) to define the indices of mobilization reserves.

MVV is the volume of air that lungs receive during one minute under forced respiration. This index characterizes the verge of functional abilities of external respiration apparatus. The

higher the MVV is, the higher the potential physical capacity of sportsmen and the higher the chance of great sport achievement [3]. Our research showed (tab. 2) that MVV index for males under research was over 110% in comparison with the predicted values. The premises affirm the high level of mobilization. The MVV index for sportsmen (football players and field athletes) was on average 145,88±9,43 l/min, 142,28±14,18 l/min. According to the authors for handball and football players, the MVV values were established in the range of 127-152 l/min [5]. That is why the received result indicates the high functional mobilization reserves of the external respiration system of male sportsmen under research. The MVV for female field athletes was 106,25±5,37 l/min, for female football players 82,62±7,72 l/min, and the mobilization reserve was 93,28 8,24% and 84,02 8,39% accordingly.

Economization reserves are characterized by the coefficient of the efficiency of respiration function, its power value, and are ensured by the diffusive capacity of the lungs, the ratio of ventilation to the pulmonary bloodstream in different parts, the increase of alveolar and ventilation gradient and the rate of oxygen utilization in the tissues. The economization of the functioning of the respiration system according to this method can be assessed only in the physiological dominant equilibrium with the help of respiration rate (RR) and tidal volume (TV). While researching the respiration in dominant equilibrium, we have established the TV 0,71±0,05 l for male football players, 0,80±0,09 l for male field athletes, 0,55±0,08 l and 0,62±0,07 l for female sportsmen accordingly. It is known that RR (of sportsmen) under tranquil respiration tends to be reduced , which simultaneously causes the increase of TV. Slow and deep respiration according to many authors [1], reduces considerably the power inputs of the organism while breathing in dominant equilibrium.

Using the assessment criteria of reserve capacities of external respiration apparatus of sportsmen of different sports specializations, we received the following results in points, which enable the assessment of the power reserve for 4,33 points for male sportsmen; mobilization reserve - 4,44 points for male football players and 4,33 points for field athletes; economization reserve - 3,44 points for male football players and 3,66 points for field athletes. The received points of reserve capacities of external respiration apparatus of female sportsmen were lower: power reserve 3,85 points for football players and 4,12 points for field athletes; mobilization reserve – 2,42 and 3,87 points accordingly; economization reserve – 2,71 and 2,87 points accordingly (fig. 1).

Comparison of the results of all types of reserves allows us to assess the reserve capacity of external respiration apparatus of sportsmen of different sports specializations. According to table 3, the general level of reserve capacities of external respiration apparatus is 4,07 0,14 for male football players, 4,11 0,21 for male field athletes, which corresponds to the above the average level of reserve capacities of external respiration apparatus. The reserve indices for female sportsmen are 3,0 0,36 and 3,62 0,21 accordingly (average level). To our mind, this has to do with the degree of functional capacities' change under the influence of sports training. The higher the degree of sports training, the lower the level of being trained . The training degree of sportsmen of the same age and sex group is determined with the initial level of functional indices, which change in different ways under the influence of training.

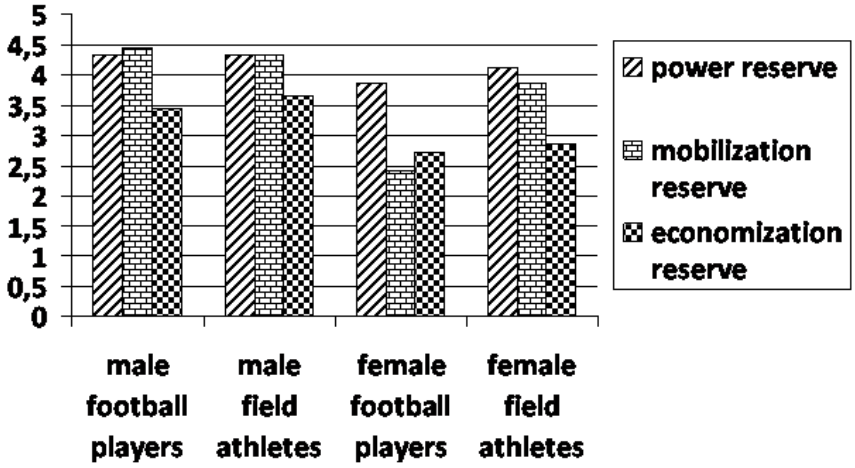


Figure 1. Reserve capacities of external respiration apparatus

The higher the change of these indices, the lower the initial level of functional preparedness. There are 2 reactions to adaptation: training and activation. The first consists of 3 stages: training, rebuilding and the state of being trained [7].

Table 3. Assessment of reserve capacities of external respiration apparatus

	Male		Female	
	Football players (n=9)	Field athletes (n=6)	Football players (n=7)	Field athletes (n=8)
Average level of reserve capacities	4,07±0,14	4,11±0,21	3,0±0,36	3,62±0,21
Level of reserves	Above the average		average	

It was established that the general tendency is to increase the power of the functional respiration system in dominant equilibrium regardless of sex. However, because of the anatomic and physiologic peculiarities of the female body: less muscle mass, a less powerful respiration system, the stage-by-stage quickness of oxygen delivery and its utilization occurs in the female body in quite a different way than it does in males. The quickness of stage-by-stage oxygen delivery is lower in sportswomen even of the highest level of sport qualification, than it is in non-trained males [12, 13]. Thus, sport training on the professional level upraises the power of the functional system of external respiration.

Conclusions

The received indices of external respiration of students of the department of physical education either correspond to or exceed the average normative values of healthy people in dominant equilibrium and of representatives of different sport activities. These indices can be used to improve and adjust the training process. It is established that the general level of the functional reserve of external respiration apparatus of male football players and field athletes is above the average; of female football players and field athletes – average.

Perspectives for further research. It is necessary to develop the predicted value standards of external respiration indices for sportsmen, which would take into account the anthropometric data, experience, type of sport activity, sport qualification in order to facilitate the customized approach to the training process.

BIBLIOGRAPHY

1. Вілмор Дж. Х. (2003). Фізіологія спорту / Дж. Х. Вілмор, Д. Л. Костілл. Київ, Олімпійська література.
2. Дунець-Лесько А. (2009). Характеристика функціонального стану дихальної системи кваліфікованих спортсменів-каратистів. Спортивна наука України, 8.
3. Москаленко Н. (2007). Критерії оцінки резервних можливостей зовнішнього дихання у спортсменів за даними комп'ютерної спірографії. Спортивний вісник Придніпров'я, 1.
4. Романюк В. (2008). Комплексне оцінювання функціональних можливостей системи дихання волейболісток. Фізичне виховання, спорт і культура здоров'я у сучасному суспільстві, 3.
5. Евдокимов Е.И. (2008). Особенности изминений функции внешнего дыхания под воздействием физической нагрузки. Физическое воспитание студентов творческих спеціальностей, 4.
6. Кабанов С. А. (2005). Особенности адаптации системы внешнего дыхания, кровообращения, морфофункциональных показателей и уровня здоровья студентов. Теория и практика физической культуры, 8.
7. Коцан І.Я. (2008). Особливості функції апарату зовнішнього дихання у молоді постпубертатного періоду онтогенезу. Фізика живого, 1.
8. Лісовський Б. (2009). Особливості зовнішнього дихання у студентів з різним рівнем соматичного здоров'я. Вісник львівського університету. Серія біологічна, 51.
9. Старшов А.М. (2003). Спирография для профессионалов. Методика и техника исследования функции внешнего дыхания. Москва. Познавательная книга-пресс.
10. Daniel C. (2008). How endurance athletes breathe during incremental exercise to fatigue: interaction tidal volume and frequency. J E P, 11 (4).
11. Mehmet U. (2004). The Prevalence of Exercise Induced Bronchoconstriction in elite athletics. Sports sciences and Med, 3 (1).
12. Rouholah Fatemi. (2012). The comparison of dynamic volumes of pulmonary function between different levels of maximal oxygen uptake. International Research Journal of Applied and Basic Sciences, 3 (3).
13. William E. A. (2002). The effects of respiratory muscles training on VO2max, the ventilaory threshold and pulmonary function. J Exerc Physiol, 5 (2).

Received: July 2013
Accepted: December 2013
Published: June 2014

Correspondence

Vitalij Fil
Glibova street, 11
Drogobych 82100
Lviv region
Ukraine
fillvitalij@rambler.ru

Journal of Physical Education & Health, 2014, vol. 3 (5), 47-52

STABILISING TRENDS OF OVERWEIGHT AND OBESITY AMONG 5-14-YEAR-OLDS IN LIECHTENSTEIN BETWEEN 2004 AND 2012

Jürgen Kühnis[1], Sabine Erne[2]

[1] University of Teacher Education Schwyz, Switzerland

[2] Office of Public Health, Liechtenstein

Abstract

Background: The worldwide trends in childhood obesity and associated health-related risks are a cause of concern. In view of this alarming tendency continuous monitoring and information on a wide age-range of children is important. Therefore, the purpose of this study was to observe national trends of childhood overweight (ow) and obesity (ob) among 5-14-year-olds in Liechtenstein over a 9-year period.

Methods: The study is based on a series of 5 cross-sectional screening examinations conducted at two-year intervals from 2004 to 2012 and includes data of 3,711 children. Boys and girls are equally represented (50.1 % and 49.9 %). BMI was calculated on standardised measurements and classified by using the International Obesity Task Force (IOTF) cut-offs. Results: Using IOTF reference, currently 16.6 % of pre-schoolers and school children in Liechtenstein are overweight (incl. obesity), i.e. approximately every 6th child is affected. Over the studied 9-year period, a non-significant decrease in the combined prevalence (owob) was observed in both boys and girls. Gender specific analysis showed that differences between boys and girls were rather weakly expressed, but seemed to increase during school age with a tendency of more overweight boys in secondary school. Conclusions: This study suggests an apparent levelling off in childhood overweight and obesity in Liechtenstein between 2004 and 2012 and corroborates similar findings from other countries.

Key words: *overweight, obesity, children, prevalence, trend, Liechtenstein.*

Introduction

Over the past decades, the prevalence of childhood overweight and obesity has increased worldwide and reached epidemic level in most industrialized and developing countries [1, 6, 16, 18]. In Europe, the current prevalence of overweight (including obesity and using IOTF definitions) among 6-9-year old primary school children varies from 11.2-37.2 % in boys and 14.7-34.7 % in girls [17]. Globally, over 40 million preschool children (< 5y) are overweight or obese and a further increase of up to 60 million (9.1%) is expected for 2020 [5]. However there is also emerging evidence of stabilising trends in different regions around the globe [9, 10, 11, 15].

Overweight and obesity in childhood and adolescence are associated with serious health consequences such as cardiovascular disease, type II diabetes, orthopaedic and psychosocial problems, lower quality of life as well as an increased risk of obesity and premature mortality in later life [6, 12, 13, 14]. Due to these various short and long-term health effects, overweight and obesity have become a public health priority in the early 21st century [18]. Therefore, a continuous monitoring of prevalence and trends at global and national levels is essential for today's health policy [18].

With this background, the aim of the present study was to observe national trends in overweight and obesity among 5-14-year-old children in Liechtenstein (including kindergarten, primary and secondary school) based on a series of 5 cross-sectional samples from 2004 to 2012.

Methods

Data were obtained from an ongoing BMI-monitoring project which was established by the

national office of public health. The project was approved and funded by the national government. Based on legal guidelines and as part of routine health screening, these paediatric examinations were offered for all children aged 5 years (kindergarten), 10 years (primary school) and 14 years (secondary school); participation was voluntary and free. All concerned households were informed with an invitation letter. The only inclusion criterion was the consensus of the parents. Anthropometric measurements were performed by doctors using standardised techniques. Height was determined barefoot using a stadiometer with a precision of ± 0.2 cm. Body weight was measured in underwear and barefoot using a calibrated electronic scale exactly to ± 0.2 kg. Collected data were anonymously transferred to a national database; confidentiality was ensured. Data were checked for entry errors and implausible data were excluded from analysis. BMI was calculated with the formula kg/m2 and categorized using the age- and sex-specific cut-offs as recommended by the International Obesity Task Force (IOTF) [2].

Statistical analysis was performed using IBM SPSS Statistics version 21 (IBM Company, Armonk, NY, USA). BMI-differences were analysed by using Mann-Whitney-U and Kruskal-Wallis-test; trends in overweight prevalence by using Chi-square-test, drawn at significant level of $p < 0.05$.

Results

Overall, the dataset included a total of 3,711 preschool and school children (1,857 boys and 1,852 girls). Table 1 summarizes the sample characteristics. Since 2004, a total of 6,043 children and adolescents have been invited to these screening so far; the mean of participation rate was 61.4 % (kindergarten 70.8 %, primary school 64.3 % and secondary school 50.6 %). Over survey periods, the BMI of children did not differ within age groups, except a significant difference ($p < 0.05$) among 14-year-olds in 2010 compared to 2004 and 2012.

Table 1: Basic characteristics of the national sample

	Total	**Kindergarten (5y)**		**Primary school (10y)**		**Secondary school (14y)**	
Year	**N**	**N**	**BMI[a]**	**N**	**BMI[a]**	**N**	**BMI[a]**
2004	733	209	15.5±1.6	300	17.8±2.8	224	21.0±3.5
2006	834	296	15.7±1.7	310	17.7±3.1	228	20.8±3.5
2008	638	217	15.8±1.8	240	17.6±2.9	181	20.6±3.3
2010	773	279	15.7±1.7	249	17.8±3.3	245	20.3±3.5*
2012	733	287	15.6±1.6	247	17.5±2.7	199	21.2±4.3
	3'711	**1'288**		**1'346**		**1'077**	

[a] BMI = mean+sd

*Different from 2004 and 2012 (Mann-Whitney-U-test; $p < 0.05$)

No significant differences between observation periods within age groups (Kruskal-Wallis-test; $p>0.05$).

Proportions and trends of overweight and obesity throughout the studied period are presented in *table 2* and *figure 1*. According to the current data from 2012 (using IOTF reference) 16.6 % of children aged 5-14-years in Liechtenstein were overweight (incl. obese). Regarding the different school-levels, 11.1 % in kindergarten, 16.6 % in primary schools and 24.6 % in secondary schools were affected by overweight (incl. obesity). This increase over the three focused age groups was significantly different between 5 and 14-year olds ($p < 0.001$) and 5 and 10-year olds (only for ow, $p < 0.05$). Between 10 and 14 year-olds no statistical difference could be detected ($p > .05$).

Overall, there was no significant change (due to the low number of cases) in the combined prevalence of overweight and obesity (owob) between 2004 and 2012, even though the rates in boys decreased from 19.6 % to 17.3 % and in girls from 16.8 % to 15.9 %, respectively (table 2). However, in comparison with the baseline survey 2004 as well as data from the previous year 2010 the development within school-levels is partly divergent. While boys in primary school showed lower prevalence of overweight and obesity in 2012, the overweight prevalence among girls has increased. In secondary school, the combined prevalence (owob) in girls in 2012 was lower than 2004 and slightly higher than 2010. Adolescent boys had a significantly higher prevalence of owob in 2012 (mainly because of the increase of obesity) than in the previous survey. In general, there is a tendency towards more overweight girls in kindergarten and more overweight boys in secondary school, but only reaching statistical significance in 2012.

Table 2: Prevalence (%) of overweight (ow) and obesity (ob) by age and gender, using IOTF reference [2]

	Prevalence (ow+ob)			
	Kindergarten (5y)	**Primary school (10y)**	**Secondary school (14y)**	**All**
Boys (n = 1859)				
2004	6.1 (3.0+3.0)	24.0[a] (20.0+4.0)	25.9 (22.2+3.7)	19.6 (16.0+3.6)
2006	12.5 (9.2+3.3)	13.4[b] (10.2[b]+3.2)	18.6 (14.7+3.9)	14.4 (10.9[b]+3.4)
2008	11.9 (7.6+4.2)	21.0 (16.2+4.8)	23.7 (19.4+4.3)	18.4 (13.9+4.4)
2010	10.1 (7.4+2.7)	19.7 (15.0+4.7)	18.3 (16.0+2.3)	15.8 (12.6+3.2)
2012	10.0 (7.3+2.7)	15.6 (13.9+1.6)	30.9[a,c] (20.6+10.3[c])	17.3 (13.0+4.3)
Girls (n = 1852)				
2004	11.8 (10.0+1.8)	14.7 (12.7+2.0)	24.1 (19.0+5.2)	16.8 (13.8+2.9)
2006	15.3 (11.1+4.2)	16.3 (11.1+5.2)	18.3 (15.9+2.4)	16.5 (12.5+4.0)
2008	17.2 (11.1+6.1)	20.0 (17.0+3.0)	14.8 (13.6+1.1)	17.7 (14.3+3.4)
2010	13.7 (7.6+6.1)	14.8 (11.5+3.3)	17.5 (14.0+3.5)	15.3 (10.9+4.4)
2012	12.4 (10.2+2.2)	17.6 (14.4+3.2)	18.6 (14.7+3.9)	15.9 (12.9+3.0)

[a] significant gender differences (in the same year; $p < 0.05$)

[b] significantly different from 2004 (χ2-test; $p < 0.05$)

[c] significantly different from 2010 (χ2-test; $p < 0.05$)

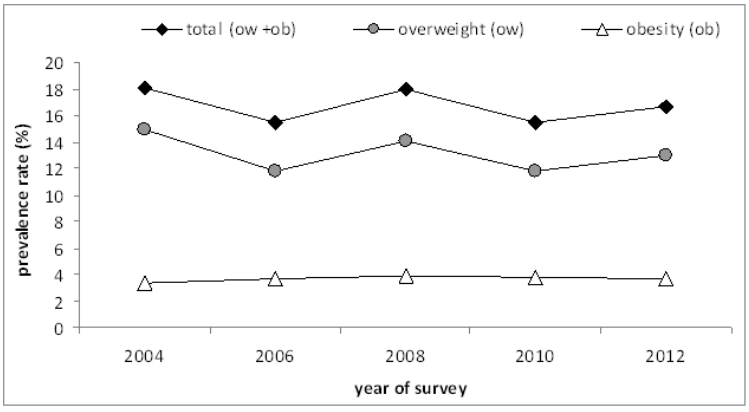


Figure 1: Trends in prevalence (%) of overweight (ow) and obesity (ob) among 5-14-year-olds in Liechtenstein, using IOTF reference [2]

Discussion

In summary, our data indicates that the prevalence of owob among 5-14-year-olds in Liechtenstein has stabilised (with a non-significant decrease of 1.5 percentage points) between 2004 and 2012. This finding is encouraging, but not an all-clear signal because the current prevalence of 16.6 % is still on a high level; on average every 9th pre-schooler, every 6th child aged 10 years and approximately every 4th adolescent aged 14 years is affected by owob. Therefore, overweight and obesity are still a serious health issue across all school levels and further surveillance and prevention is necessary [11, 15]. In addition, it cannot be said, if this is only a temporary or a sustainable trend. Any possible causes for the current positive trend (due to the cross-sectional design) can only be speculated on, but according to other studies it seems reasonable that the recent targeted educational and preventive programmes have contributed to raisiing the awareness of children, mainly in young children and their parents [10, 11, 15]. In this multiple context, the school is a central and popular setting for health promotion activities, because here all children and adolescents can be impacted during an important transition period, regardless of social or cultural origin [3, 4, 8, 18]. Thereby, combined school-based physical activity and nutrition interventions including educational and environmental components seem to be most effective [4, 8, 18].

Similar national prevalence and stabilising trends (in comparable age groups, but occurring at different levels) have also been observed in other European countries (using IOTF criteria). According to findings of a representative study in our neighbouring state Switzerland between 1999 and 2012, the current prevalence of owob among school children aged 6-12y was 17.4 % and did not change during the observed period [10]. In a study in France conducted in 1998-1999 and 2006-2007 (based on two representative samples of children aged 3-14 years) the total prevalence of 14.5 % (owob) in 2006-2007 was not significantly different from the baseline survey [9]. In general, our detected trend for stabilisation seems to be more apparent in younger (kindergarten and primary school) than in older children (secondary school); similar age-related differences have also been found in other surveys [11, 15].

We found a substantial rise of overweight during adolescence; the rate of owob in 2012 among 14-year-olds was 2.2 times higher than in kindergarten ($p < 0.001$); in the first survey even 2.7 times higher ($p < 0.001$). This peak prevalence may be attributed to pubertal development, changes in social relationships and youth autonomy, which also influence their health-related behaviour [3]. Sedentary and unhealthy habits (e.g. excessive use of media, malnutrition and less physical activity) are more common at this critical stage of life than during childhood [3, 7, 9]. Regarding overweight prevalence, our analysis suggests that boys in secondary school tend to be more overweight (but this is only significant in the recent survey 2012). This corresponds to findings from other studies. According to a current review on overweight and obesity prevalence among adolescents (aged 10-19 years) worldwide, boys showed a higher prevalence in almost half of the included national studies and a higher obesity rate in almost all countries [1]. In the HSBC survey of 2009/2010 (a WHO collaborative cross-national study conducted in 43 countries and regions across Europe and North America) adolescent boys (aged 13 to 15 years) tended to have significantly higher overweight prevalence than girls in almost all observed countries and regions [3]. The reasons for this gender difference may be due to the fact that female teenagers tend to be more weight conscious and eat more healthily than boys [3]. Furthermore, the socioeconomic status as well as geographic and cultural conditions are other important determinants for gender, regional and national differences [3, 11, 15]. In addition, it can be assumed that existing prevention efforts seem to reach adolescents less than younger children. Thus, intervention programmes for this target group should be intensified and boys and girls addressed separately [3].

Major strengths of our study are the large national sample covering all school-levels and including a 9-year monitoring period (with routinely collected data). However, since our

findings have been derived from data from a small state in a rural area (with only 37,000 inhabitants and no urbanised areas), they cannot be generalised for other regions. No causal interpretation is possible because of the cross-sectional design. Furthermore, due to the voluntary participation and anonymous collection of data, the reasons why an average of 38.1 % did not participate can only be speculated on.

Conclusions

Our analysis suggests that childhood overweight and obesity in Liechtenstein is plateauing on a high level and corroborates with similar findings from other countries. Whether this trend is sustainable remains unclear and further investigation is needed. Although the installed monitoring system does not provide detailed information about determinants of overweight, it is an essential tool to assess the situation at regular intervals.

Acknowledgements

The authors would like to thank the national government for supporting this monitoring study and Dr. Esther Walser-Domjan for her assistance during the initial and implementation stage of the project.

BIBLIOGRAPHY

1. Bibiloni MM., Pons A., Tur JA. (2013). Prevalence of overweight and obesity in adolescents: a systematic review. ISRN Obesity, vol. 2013, Article ID 392747. doi:10.1155/2013/392747.
2. Cole TJ., Bellizzi MC., Flegal KM., Dietz WH. (2000). Establishing a standard definition for child overweight and obesity worldwide: international survey. BMJ, 320:1-6.
3. Currie C., Zanotti C., Morgan A., et al. (2012). Social determinants of health and well-being among young people. Health Behaviour in School-aged Children (HBSC) study: international report from the 2009/2010 survey. Copenhagen, WHO Regional Office for Europe (Health Policy for Children and Adolescents, No. 6).
4. De Bourdeaudhuij I., van Cauwenberghe E., Spittaels H. et al. (2011). School-based interventions promoting both physical activity and healthy eating in Europe: a systematic review within the HOPE project. Obes Rev., 12(3):205-221. doi: 10.1111/j.1467-789X.2009.00711.x
5. De Onis M., Blössner M., Borghi E. (2010). Global prevalence and trends of overweight and obesity among preschool children. Am J Clin Nutr., 92(5):1257-1264. doi: 10.3945/ajcn.2010.29786.
6. Gupta N., Goel K., Shah P., Misra A. (2012). Childhood obesity in developing countries: epidemiology, determinants, and prevention. Endocr Rev., 33(1): 48-70. doi: 10.1210/er.2010-0028.
7. Hills AP., King NA., Armstrong TP. (2007). The contribution of physical activity and sedentary behaviours to the growth and development of children and adolescents: implications for overweight and obesity. Sports Med., 37:533–545.
8. Khambalia AZ., Dickinson S., Hardy LL., Gill T., Baur LA. (2012). A synthesis of existing systematic reviews and meta-analyses of school-based behavioural interventions for controlling and preventing obesity. Obes Rev., 13(3):214-233. doi: 10.1111/j.1467-789X.2011.00947.x.
9. Lioret S., Touvier M., Dubuisson C., et al. (2009). Trends in child overweight rates and energy intake in France from 1999 to 2007: Relationships with socioeconomic status. Obesity, 17(5):1092-1100. doi: 10.1038/oby.2008.619.
10. Murer SB., Saarsalu S., Zimmermann MB., Aeberli I. (2013). Pediatric adiposity stabilized in Switzerland between 1999 and 2012. Eur J Nutr., 2013. doi: 10.1007/s00394-013-0590-y.
11. Olds T., Maher C., Zumin S., et al. (2011). Evidence that the prevalence of childhood overweight is plateauing: data from nine countries. Int J Ped Obes., 6:342-360. doi: 10.3109/17477166.2011.605895.
12. Reilly JJ., Kelly J. (2011). Long-term impact of overweight and obesity in childhood and adolescence on morbidity and premature mortality in adulthood: systematic review. Int J Obes., 35:891-898. doi: 10.1038/ijo.2010.222.
13. Singh AS., Mulder C., Twisk JWR., Van Mechelen W., Chinapaw MJM. (2008). Tracking of childhood overweight into adulthood: a systematic review of the literature. Obes Rev., 9(5):474-488. doi:10.1111/j.1467-789X.2008.00475.x.
14. Tsiros MD., Olds T., Buckley JD., et al. (2009). Health-related quality of life in obese children and adolescents. Int J Obes., 33:387-400. doi: 10.1038/ijo.2009.42.
15. Wabitsch M., Moss A., Kromeyer-Hauschild K. (2014). Unexpected plateauing of childhood obesity rates in developed countries. BMC Medicine, 12, 17. doi:10.1186/1741-7015-12-17.
16. Wang Y., Lobstein T. (2006). Worldwide trends in childhood overweight and obesity. Int J Pediatr Obes., 1:11-25.

17. Wijnhoven TMA., van Raaij JMA., Spinelli A., et al. (2013). WHO European Childhood Obesity Surveillance Initiative 2008: weight, height and body mass index in 6-9-year-old children. Pediatr Obes., 8(2):79-97. doi: 10.1111/j.2047-6310.2012.00090.x.
18. WHO (2012). Population-based approaches to childhood obesity prevention. Geneva, World Health Organisation.

Received: September 2013
Accepted: February 2014
Published: June 2014

Correspondence

Prof. Dr. Dr. Jürgen Kühnis
University of Teacher Education Schwyz
PHSZ Schwyz, Switzerland
juergen.kuehnis@phsz.ch

Journal of Physical Education & Health

Social Perspective

PHYSICAL EDUCATION TEACHER

We are planning to issue a volume including materials concerning the **education, improvement of qualifications and the work of physical education teachers in different countries**.

We would like to invite all physical education teachers/scholars to prepare an article on the above mentioned topic, analyzing/exploring/characterizing the situation in your country. It could be a case study regarding the entirety of the above mentioned topic or selected issues within this scope, such as:

1. The profession of a physical education teacher

- qualifications entitled to realize the program of physical education at respective levels of school education; qualifications for the realization of the various physical education programs at all levels of learning/schooling
- the number of didactic classes per week;
- the age of retirement;
- the results of research projects, as well as the characteristic problems of publications concerning this profession; the results of research projects, as well as the characteristic problems concerning publication within the profession

2. Studies preparing for the above mentioned profession

- types of schools educating/training physical education teachers;
- the structure of the studies' programs (names of subjects, the scope of the classes that realize their programs);
- the professional titles of graduates;
- the results of research and the characteristics of problems concerning the education of physical education teachers;

3. Improving the professional qualifications of physical education teachers

- normative settlements regarding this problem;
- programs and the organizational form of courses for physical education teachers;
- the results of research and the characteristic problems concerning this issue.

4. Other issues in the scope of the topic proposed at the beginning, which are specific for your country.

Works should be submitted (only as an attachment to an e-mail)
to the following e-mail address: **jpe_health@onet.eu** – in the form compliant with the requirements of the magazine

(vide: **www.jpe-health.pwsz.raciborz.edu.pl**).

After receiving a positive review, articles shall be published in following issues.

Jerzy Pośpiech
Editor

INFORMATION FOR THE PAPER AUTHORS

Journal of Physical Education & Health

Social Perspective

is a science periodical published by the following universities: Technical University in Opole (Poland), High State School in Raciborz (Poland) and University of Balearic Islands (Spain) which discusses the following problems:

- the health of children, adolescents and adults,
- the physical activity of children, adolescents and adults,
- attitudes towards health presented by children, adolescents and adults,
- knowledge about health presented by children, adolescents and adults,
- initiatives, and programs to improve health,
- physical and health education in school curricula and public services,
- the training of teachers of different specialties,
- developing professional skills by teachers and
- the training and employing teachers.

Journal of Physical Education & Health

Social Perspective

publishes papers only in English:
▪ original papers (anonymously reviewed), ▪ demonstrative papers, ▪ editorial papers,
▪ polemics, ▪ conference and symposium information.

The quantity of the original or editorial papers (including tables, bibliography, abstract) can not be more than 30.000 marks including spaces (about 15 pages A4).

Layout of the materials submitted to be published:

1. **page**: title, names and surnames of authors, name and address of the institution represented by authors, post address, telephone number, e-mail, agreement,
2. **page** and following pages: title, abstract (15 to 20 lines), keywords (to 5), text.

Materials submitted for publication (text – type 12 point, 1,5 of line, tables, and figures (black-white) with numeric data describing them) should be sent only as a Word document with doc. extension as an e-mail attachment.
Text should be sent by the first author from his or her e-mail box.
Layout of the original paper only: abstract, introduction, aim, materials and methods, results,

discussion, conclusion, bibliography (up to 30 positions).

Footnotes in the paper referring to the bibliography should be marked with the Arabic numbers and square brackets. Bibliography listing should be numbered in alphabetical order.

The submitted paper cannot be printed or submitted for publication in another journal.

A statement confirming this condition should be on the front page of the paper.
Submitting a paper for publication and attaching other data is considered a conscious agreement

to print and publish it electronically, also on the Internet.

The editorial office reserves the right to shorten papers, correct linguistic mistakes and make any other editorial corrections.

Authors do not receive any royalties for publishing their articles, although authors receive a copy of the journal.

Editorial office address

(Editor-in-Chief: prof. Jerzy Pośpiech)
Politechnika Opolska, WWFiF, ul. Prószkowska 76, budynek nr 9 p. 23, 45-758 Opole, Poland
www.jpe-health.pwsz.raciborz.edu.pl
e-mail: jpe_health@onet.eu


POLITECHNIKA
OPOLSKA


UIB


PAŃSTWOWA WYŻSZA SZKOŁA ZAWODOWA
w RACIBORZU