The purpose of this study was to find out the management skills required by boxing coaches to administrate their clubs. For the purposes of this study a scale was constructed which was answered by 98 boxing coaches. Explanatory factor analysis revealed seven factors: Communication-public relations (5 items), event management (4 items), management techniques (4 items), new technologies (4 items), prevention-safety (2 items), sport (5 items) and sports facilities (2 items). The Cronbach of the scale was 0.85. The five competencies that rated by the coaches were: Supervisors of the area of training, maintaining excellent communication with athletes, using new technologies (e-mail, internet), handling disciplinary matters, accidents, complaints and reports on some sporting games and promoted harmony among athletes. We concluded that boxing coaches understand that the competencies required for meeting their obligations, were related to sports, prevention, safety and communications-public relations.

Key Words: Competencies, Skills, Management, Amateur boxing
Introduction

Management is a set of activities of planning, organization, leadership, control and staffing of resource an organization designed to achieve objectives in an effective and efficient way (Griffin 1993).

Sport management is «the combination of skills associated with planning, organizing, staffing, controlling, financial management, leadership, and evaluation within an organization or department that provides athletic services or products» (DeSensi, Kelly, Blanton & Beitel, 1990).

For executives and or managers, to be effective they need to have a set of skills and personality traits. This knowledge enables them to know what to do, and their personality traits and abilities, allowing them to be able to run. So, the combination is essential to efficiency and organization.

Only few studies were studied the required competencies by coaches of team or personal sports.

Rodrigues et al. (2009), studied the skills needed by Portuguese basketball coaches. One hundred and seventy eight subjects answered in a thirty seven questions scale. Exploratory factor analysis reveal the following factors of competencies: a) coach education, b) competition, c) management, d) personal and social and d) practice. The results also showed that the high experienced coaches rate with high scores the items related to knowledge and professional competences than low experienced coaches.

Kostolopoulos (2011), in another study determined the competencies needed by basketball coaches of three Greek Divisions (first, second and third). Two hundred and forty five subjects were randomly selected to participate in the study and completed the scale which was constructed for the study. Analysis of the data revealed 5 factors consisting of 21 competencies: Computer skills (4 questions); communication-leadership (5 questions); first aid-risk management (2 questions items); programming (4 questions); and sport science-practice (6 questions). Also, it was observed that the top rated competencies were the first aid and training skills, following by computer and management skills. The author concluded that a successful basketball coach should have both training and management competencies.

Stavropoulos et al. (2012), constructed a questionnaire to identify the skills needed by track and field coaches in Greece to perform their duties. Three hundred and forty nine Greek track and field coaches, randomly selected, participated in the study and rated the questions of the scale. The data analysis showed five factors comprising 22 competency statements: «biology» (3 questions); «injury prevention-crisis management» (3 questions), «field training» (4 questions), «field management techniques» (7 questions) and « sport science» (5 items).
Also observed that the top rated competencies were «demonstrating an understanding of specific inherent risks of sport activity» and «an understanding of psychology». The authors concluded that the scale developed for this the study was a valid and reliable instrument to determine the competencies of track and field coaches.

The boxing coaches, depending on of the morphological, physiological and biochemical characteristics of motor skills of the athletes, were training the technical and tactical skills, to improve their performance (Ashker 2011), and develop optimal tactics for the games to win by landing more punches (Davis, Wittekind & Beneke, 2013), by organize the training program.

No study was found to determine the required by boxing coaches competencies in order to proper administrate his team. Therefore the purpose of this study was to identify the required competencies that needed by boxing coaches in order to manage their clubs.

**Subjects – Methods**

The present investigation was carried out by the department of sport management, Faculty of Human Movement and Quality of Life, University of Peloponnese, started on January 2009 and finished at the end of June 2010.

**Questionnaire development**

The questionnaire used in this study was developed with procedures similar to related studies: a) a literature review (Barcelona, 2001; Hatfield, Wrenn & Bretting, 1987; Jamieson, 1987; Kouvelios, 2003; Lambercht; 1987; Toh, 1997; Tripolitsioti et al., 2007; Tripolitsioti et al., 2009; Tripolitsioti, 2010), b) informal interviews with boxing coaches, c) a panel of six specialists (3 Academicians and 3 boxing coaches, and d) a pilot study to test the questionnaire.

An initial list of 42 competencies decreased in 24 after the critical analysis of the specialists. The 24 competencies selected were divided by the specialists into 7 subscales: Sports (4 questions), prevention-safety (2 questions), communication (4 questions), new technologies (4 questions), sports (2 questions), technical management (4 questions) and organizing sporting events (2 questions).

A pilot study was carried out before distributing the questionnaires to the boxing coaches. The purpose of the pilot study was to evaluate the face validity (comprehension) of the questionnaire. Boxing coaches were asked to evaluate in a five-point Likert style scale the degree to which the statements were true to them
by endorsing (a) strongly agree, (b) agree, (c) disagree, d) strongly disagree, (e) not having an opinion.

Statistics

The data collected from boxing coaches were entered into Microsoft Excel 2007 software and later converted to the SPSS 17.0 statistical package for data analysis. In terms of the data analysis, we used descriptive statistics (means, standard deviations, frequency rankings of the competency statements and percentages. Also to determine the number of competency factors of boxing coaches, a factor analysis was carried out (Kabitsis, 2004). The mean values of factors were compared with the analysis of variance (ANOVA). For comparisons in subgroups (multiple comparisons) we used the Bonferroni method. The independent variables introduced in the model were age group, education level, job status and marital status of coaching as categorical variables. The level of significance for all statistical tests was set at $\alpha = 0.05$.

Results

In the present study 98 boxing coaches participated. The data about age, marital status, education level, employment years as a boxing coach, salaries and seminars is presented in table 1.
In order to determine what competencies coaches need to meet their duties, an exploratory factor analysis was executed. The aim of this analysis was to group the questions-skills using the orthogonal on Varimax rotation with eigen values (eigen values). The questions were grouped in each factor should have eigen value greater than 1.0.

### Table 1. Characteristics of the sample.

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25-34</td>
<td>5</td>
<td>5.1</td>
</tr>
<tr>
<td>35-44</td>
<td>34</td>
<td>34.7</td>
</tr>
<tr>
<td>45-54</td>
<td>27</td>
<td>27.6</td>
</tr>
<tr>
<td>&gt;55</td>
<td>32</td>
<td>32.7</td>
</tr>
<tr>
<td><strong>Marital status</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>58</td>
<td>59.2</td>
</tr>
<tr>
<td>No married</td>
<td>40</td>
<td>40.8</td>
</tr>
<tr>
<td><strong>Education level</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic education</td>
<td>23</td>
<td>59.2</td>
</tr>
<tr>
<td>Higher education</td>
<td>59</td>
<td>40.8</td>
</tr>
<tr>
<td>Graduated education</td>
<td>16</td>
<td>16.3</td>
</tr>
<tr>
<td><strong>Number of years employed as a boxing coach</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-9</td>
<td>26</td>
<td>59.2</td>
</tr>
<tr>
<td>10-19</td>
<td>40</td>
<td>40.8</td>
</tr>
<tr>
<td>&gt;20</td>
<td>32</td>
<td>16.3</td>
</tr>
<tr>
<td><strong>Salaries</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;10.000 €</td>
<td>12</td>
<td>12.2</td>
</tr>
<tr>
<td>10.000-20.000 €</td>
<td>71</td>
<td>72.4</td>
</tr>
<tr>
<td>&gt;20.000 €</td>
<td>15</td>
<td>15.4</td>
</tr>
<tr>
<td><strong>Seminars</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>21</td>
<td>21.8</td>
</tr>
<tr>
<td>No</td>
<td>77</td>
<td>78.2</td>
</tr>
</tbody>
</table>
Table 2. *Principal component factor analysis following varimax rotation.*

<table>
<thead>
<tr>
<th>Factors</th>
<th>N of items</th>
<th>Eigen values</th>
<th>% of variance</th>
<th>Cumulative (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge of the sport</td>
<td>5</td>
<td>6.937</td>
<td>28.905</td>
<td>28.905</td>
</tr>
<tr>
<td>Safety-prevention</td>
<td>2</td>
<td>2.578</td>
<td>10.740</td>
<td>39.645</td>
</tr>
<tr>
<td>Communication-public relations</td>
<td>5</td>
<td>2.136</td>
<td>8.902</td>
<td>48.546</td>
</tr>
<tr>
<td>Computer skills</td>
<td>4</td>
<td>1.707</td>
<td>7.114</td>
<td>55.661</td>
</tr>
<tr>
<td>Sport facilities</td>
<td>2</td>
<td>1.401</td>
<td>5.839</td>
<td>61.500</td>
</tr>
<tr>
<td>Management techniques</td>
<td>4</td>
<td>1.231</td>
<td>5.129</td>
<td>66.629</td>
</tr>
<tr>
<td>Event Management</td>
<td>2</td>
<td>1.108</td>
<td>4.617</td>
<td>71.246</td>
</tr>
</tbody>
</table>

Discussion

The purpose of the present study was to construct a scale in order to identify the competencies required by boxing coaches to administrate their clubs. The exploratory factor analysis revealed 7 factors: sport, injury prevention-safety, communication-public relations, new technologies, sport facilities, management techniques and event management.

The factor «sport» with eigen value 6.937, that explain the 62.458% of the total variability of the data, get Cronbach $\alpha=0.79$ and loading between 0.840-0.504, was classified in the first place. These results are comparable with other publishing studies.

Moore & Webb, (1993), classified this factor in the first place, Afthinos (1993) and Chen (1993), ranked in the second place. Conversely the studies of Jennings (1984) and Quain & Parks, (1986), in the forth place, Gouws (1993), in the seventh and Jamieson (1980), in the tenth. This ranking variation according to factor loadings is perhaps due to the heterogeneity of the answers of the respondents.

In our study the boxing coaches rated with high scores the relative with sport (box) items. This is due to the answers that were given by the participant in these items, demonstrates an understanding of human limitations in sport, demonstrates an understanding of the relationship between health and recreational sport and an understanding of warm up and cool down.

The factor «prevention-safety» with eigen value 2.578, that explain the 39.645
% of the total variability of the data, get Cronbach $\alpha=0.79$ and loading between 0.810-0.764, 0.840-0.504, was classified in the second place.

The results of the present investigation are comparable with many studies. Jamieson (1980), classified the factor prevention-safety in the eleventh place, Jennings (1984), who ranked this factor in the second place, Montour (1982) & Lambrecht (1987), who ranked it in the tenth, Davis (1987), ranked this factor in the first place and Chen (1993), ranked it in the seventh. In the some other studies, such as Farmer’s (1989), the questions were grouped under the term safety, while in Lin study (1998), the items were grouped in the health management-rehabilitation factor.

This variation in the rate is due to the fact that these investigators used different questionnaires. As a result, there was the possibility to use the same terms in most studies, which classified the prevention-safety management factor, in high places.

The factor «communication-public relations» with eigen value 2.136, that explain the 48.546 % of the total variability of the data, get Cronbach $\alpha=0.76$ and loading between 0.683-0.512, was classified in the third place.


These observed differences between the communication-public relations factor ranking, is due to employment positions of participation in our study subjects and the way in which the managers understood the questionnaires items.

The factor «computer skills» with eigen value 1.707, that explain the 55.661 % of the total variability of the data get Cronbach $\alpha=0.76$ and loading between 0.769-0.597, was classified in the forth place.

There are a lot of studies that confirm the importance of computer skills during sport management profession, Davis (1987), in his study with 477 practitioners of indoor health and fitness clubs ranked the factor computer skills in the second place, as in Afthinos’s (1993) and Quinn’s (1994), studies while classified in the third place in Skipper’s (1990), DeSensi et al., (1990), ranked this factor in the forth place, Cuskelly & Auld (1991), in the fifth and Case & Branch, (2004), in the sixth. Boxing coaches understood the importance of computer skills and rated them with high scores.

The factor «sport facilities» with eigen value 1.401, that explains the 61.500 % of
the total variability of the data, get Cronbach $\alpha = 0.75$ and loading between 0.824-0.658, was classified in the fifth place.

Many studies determined that sport facilities competencies were importance. Tsai (1996), in his study classified the sport facilities factor in the second place, while in the Afthinos's study (1993), it was classified in the third place. In Jamieson's study (1980), as well as in Medalha (1982), Jennings (1984), Skipper, (1990) and Chen's (1993), it was ranked in the forth place, while in Nikolaidis's study (1995), in the eighth place.

Some studies when they grouped the items in one factor, used different terminology than of the present investigation, which is sport facilities. For example in the Skipper's (1990), determined two factors, that are relative with the sport facilities of our study: a) sport facilities programming, that classified in the second place and b) sport facility operation, that ranked in the forth place.

The factor «management techniques» with eigen value 1.231, that explain the 66.629 % of the total variability of the data, get Cronbach $\alpha = 0.67$ and loading between 0.728-0.508, was classified in the sixth place.

The competencies that were grouped in the management techniques they found to be important in a large number of publishing studies. In the studies of Ulrich & Parkhouse, (1982), Ellard (1984), Parks & Quain (1986), Farmer (1989), Gouws (1993) and Nikolaidis (1995), this factor ranked in the first place. In the studies of Jennings (1984), Cheng (1993) and Koustelios (2003a), the management techniques were classified in the forth place, in the Afthinos's (1993), in the fifth place, while in the Jamieson's study (1980), in the sixth place. It should mentioned here, that in some studies the factors were renamed in order to exist relationship between the used terminology which shows the grouped items. For example the sport management techniques and administration techniques, include items, that have relationship with management techniques (Kim, 1997). In the present study it was used the terms management techniques, that was part of many competency scales. It seems that boxing coaches understood the importance of these items and ranked them high for this reason.

The factor «event management» showed loadings between 0.728-0.508. The importance of this factor for the sport management specialists have been addressed by several investigators (Skipper, 1990; Afthinos, 1993 & Nikolaidis, 1995). The boxing coaches of the present study, ranked higher and with homogeneity the competencies of the mentioned factor.

Also, it was determined that the top five items which were perceived as important by boxing coaches were supervising the operation of training field, maintaining excellent communication with athletes and staff, utilizing customized computer software programs for such purposes as scheduling, reservations, registration, etc, handling disciplinary action, accidents, game protests, and eligibility status reports and promoting harmony among athletes. These results are similar to the other stud-

In conclusion the results of this study showed that the competencies requiring by boxing coaches effectively management their teams, are relative to knowledge of the sport, safety-prevention, communication-public relations, computer skills, sport facilities, management techniques and event Management.

References


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