119 - EVALUATION AND ANALYSIS OF GOLF GAME AND PORTUGUESE COURSES

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INTRODUCTION - The sport and its leisure aspect are more and more faced as phenomena deeply linked with cultural wave. The sport itself an expression of a culture and a highly important aspect not only represents "the technical field" but also a large dimension, as it began owing its own cultural discourse. Historically speaking the sport has been a way to overcome a vital human need - The Body in action; so the body is the core of the modern sport. Golf is an ideal sport to the elderly because offers the possibility of maintaining the performance without spending physical strength, enjoying nature.

Golf is played on open-air, walking in nature on the grass, the trees, streams, lakes, sea, in the rain and sun; it is a whole season sport. It is a possible chance to face sedentarism and to a precocious elderly process. This study analysed by transversal approach the golfers features up the age of fifty (50). The several golf courses traces present to the players a challenge at each hole, those imply different physiological responses, the golfer has to be capable of choosing the course which fits better with his physic performance. It was observed the effect promoted by golf physical activity, its regular practice promote health, in the maintenance of an independent way of life, increasing the functional ability and as wellness provider. Golf has been registering a large expansion, attracting new male and female players of several ages without meaningful records of lay out.

MATHERIAL AND METHODS - This exploratory study was designed from two samples-characterization of Portuguese Continental golf courses and features of the players with or up the age of fifty (50). Studies were made in 43 golf courses, being fifty- five in the Portuguese Continent. The players sample was of aleatory type by groups, strategically acceptable representative and feasible; it was studied a population of 327 players from those 46 women with average age 58 years presenting a typical deviation of 7.49 being 8 players per course. The criteria taking into account for players selection were:

- Golfers with age of fifty or up
- Membership of Portuguese Golf
- Having allotted Handicap by its club.

The analysed variables were clustered according the following criteria:
- Players data
- Golf courses data

The collection of players data had the following phases:
- Collection data: name, age, nationality.
- Mass measure, height and spread.
- Measure of bio-impedance
- Density of coetaneous folds.
- Polar use
- Questionnaire to the players and dietary habits.

All the collections were carried out in golf courses before, during and after tournaments on normal activity days, on days with temperature between 18 and 28 degrees, by a unique observer. Golf courses outcomes was made from the scorecards and official data from Portuguese Golf Federation.

-Formulae applied:

Body density was calculated by the formula of Durnin & Womersley (1974):

$$D = 1.1765 - 0.0744 * \log (BI + TR + SB + SC)$$

Body surface was calculated by the formula of Mosteller (1987):

$$B.S. = \sqrt{\frac{height \times weight}{60}}$$

Endomorphy was taken by Ross & Marfell - Jones (1983):

Value (inferred) total of adipose folds = Skf x 170.18 /height

Ectomorphy calculus was carried out from three several equations Rosse & Marfell - Jones (1983), according to the value for the reciprocal pondered index (RPI):

RPI 40.75 ectomorphism =0.732 X RPI - 28.56
38.25 RPI 40.75 ectomorphism = 0.463 X RPI - 17.63
RPI 38.25 ectomorphism = 0.1

-**Statistical Procedures:**

Descriptive variables and frequency tables, Tests of independency of Qui-square; Ró of Spearman and R. de Pearson - calculate the variables dependence rate, t of Student and Anova - Comparison of means in each level of variables, Factorial Analysis - resume of acquired information on a wide group of variables.

RESULTS - The players who enrolled our study, highlighted that golf is important in health maintenance for middle-aged individuals and elderly. Mazzeo et al.(1998) stated that physical activity benefits are highly different, have physiological metabolic, psychological and functional adaptations improving an independent healthy state of life for the population branches up the 60 years; when the exercises for the elderly have enough intensity provide an increase of strength from 60 to 100%. Matsudo et al. (2006), Defined "Physical activity" as any movement which results from voluntary muscular contraction leading to energetic dispense up the response levels (parameters). Walking has an important role as physical activity; when walking at a speed we can converse, we speak about a physical activity with moderate intensity. As that walking is undergone on a more organized way concerning duration, intensity, frequency and rhythm is defined as exercise. So the aim is walking intensively competing or be the first of all we give it a sportive connotation such as athletic march and golf. This work is drawn in the established rules, as the enrolled players went on a fairway in the studied courses.

Patte et al. (1995) in study for the Centers for Disease Control and Prevention and The American College of Sports

Medicine (1998) based on available evidences, proposed that each adult citizen had to practise five days a week 30 minutes of physical activity of moderate intensity on continual way or accumulated; in golf the players practised twice a week in their club. Theriault et al. (1996) revealed that walking during a golf match is a moderate intensity effort with long duration, having spans between the shots getting in the elderly players the maintenance or the growth of aerobic capacity; it is also said in opposition to other modalities, in this one the frequency of players increase with age.

It was observed in the tournaments the majority plays with 14 irons going on foot through the fairway. The average duration of a tour is 4/5 hours and the average of the strokes is Par 3-4, Par 4-5, Par 5-6, what we consider in the normal parameters of the modality. The factor of only being six left-handed players, the "iron" as "golf club" of first choice, distances with the Drive of 270m mean distance of 194m reveals players within the established patterns, who do not adapt to the ageing process. On the other side Matsudo et al.(2002), referred the ageing process as being accompanied with several negative consequences in the different systems of the organism and the individual gets less active with age diminishing physical capacities. Several authors stated that the maximal muscular strength is achieved about the thirties (30), being stable till the age of fifty (50) since then the decrease begins. Some authors stated that the maximal muscular strength is achieved by the thirties, being stable till the 5th decade, starting then the decay.

Roger & Evans, 1993 observed that from 50 to 70 years of age occurs a loss of 15% per decade after which the decrease of muscular strength higher to 30% each ten years; this generalized decay has significative implications in the functional capacity of the elderly. In our study the golf players, according to the collected data, concerning the distances with drive or iron 7, previously referred. It is possible to conclude that golf characteristics contribute to achieve a good physical and sportive performance. The handicap category is an a high edging and the recognition by the club is a positive factor which contributes to the number of rounds 7 played per month. The trainings on the Diving-Ranger are not attractive perhaps by the mild golf round. As it was proved the players have got diseases, which reduce their physical abilities to practice the modality. *The American College of Sports Medicine* (1998) concluded that reduction of risk factors relatied with disease (cardiac, diabettis, etc.), improve welfare and enlarge life expectancy. The strength training contributes to the non-reduction of mass and muscular performance related to normal ageing. The practice of golf is advisable on sedentary habits prevention.

Diet may have a negative or positive influence upon the outcome of the player, it has to be ruled in order to improve the sportive capacity and a long health. Golfers diet must be fitted according to energetic, physiological need with a careful intake of calories, carbon hydrates, grease, proteins, water, minerals and vitamins; on the other hand it is necessary to suit these nutrients to: training tournament and recovery course. The collected data is patterned with normality. As a player must have 5-6 meals a day: breakfast, a snack, lunch, tea, dinner and probably supper, the conclusion we achieved are similar to the authors referred, breakfast the principal and the last three or four hours, before competition, a hippo-caloric one. Competing requires the intake of sweaty, isotonic and energetic drinks preventing hypoglycaemia and recovery after energy dispense. A good player performance implies good hidratation to avoid lesions; the amount of water - depends upon the muscular work (type of course, fairway with/without buggy) temperature, humidity and altitude - the advisable quantity is 1.5L as drink and 1.5L as nutrients liquid (soup).

With this study we came to the conclusion that golf is socially very well accepted with its hedonist, ecologic and balance of mind and body practised by several kinds of people from different professions. This work studied the influence and linkage of variable which are on the basis of energy dispenses 821 kcal during a round which proves that, in what concerns Portuguese golf courses conditions, they are highly recommended. Golf player physical profile is designed not by age factor, though slight differences were verified in energy spending but not statistically relevant. The various ages spend quite the same amount which makes golf an ideal sport to the studied fringe.

Portuguese and English player significant differences were records, dispending the Portuguese more energy, so the 0 hypotheses is rejected. It is concluded that the English lose in around less energy. Referring Magnusson (1999) the mean of loss of energy for around is about 622 to 960 kcal with 18 holes depending on trace of the green; so to say the outcame of our study is 821 kcal, which is a good pattern. Murase et al. (1989) watched five golfers concerning cardiac rate with 50 of age who achieved after 18 holes round a mean frequency of 108 b.p.m.; our study referes 104.5 b.p.m. Tróia course is one where more energy loss while Benamor, Pine Cliffs and Quinta dos Álamos are the opposite. Players between 60 and 75 Kg lose more energy but the thinners and fat ones spend less energy. Several aspects were taken into account concerning energy dispense:

- tall golfers lose more
- men more than women
- players with reduced subcutaneous fat are the ones who dispend less
- the players spread are the ones who lose more.
- the male players with much high corporal or high fat spend on a round a lot of energy.
- female players with low rate of corporal fat lose in around a huge very much.

BMI index is calculated with height, weight and age, that majority of players about 63% have a BMI while women 89.1% a normal one. As endomorphy and ectomorphy are concerns, differences were noted between Portuguese and English, presenting theses ones higher values. Age does not have effect on the referred facts. Sexes have statistical relevant differences. Concerning endormophy relation with spread significant assimilarities were recorded in the predefined groups.

Competitive profile of players only 8.1% reveal physical limitations at swing, thinking about the age pattern it are very good. In majority of players the performance is not affected by fatigue, so the ones with professional physical activity have a lower handicap while the others with more free time have a high handicap; it is important to refer that the handicap of players lower due to the days of practice, increase in the ones who go to the course more than 5 times a week.

Concerning the handicap of the players, in Estoril course the handicap is lower than of Montebello's. Statistically is important the difference between the ones you play with 14 irons and the others who not, having these a higher. Game duration - the players with 3 to 4.5 hours of break reveal a lower handicap, showing a higher one those who last more. It was recorded that the number of shots corresponds to the Par presenting a lower handicap, though in Pars 3 and 4 the players with a shot number less than the Par do not have low handicap. So much longer is the distance of de driver shorter is the handicap and the same with iron 7. The players who begin with fatigue have a higher handicap, the ones who finish tired register lower. The players with limitations on swing record the same handicap, which is also verified with players using driving range. Left-handed and right-handed golfers reveal a lower handicap, although the difference from the right-handed is not significative maybe due the trace of the course was designed according to their difficulties, making it easier to the left-handed. Golfers course choice - North area players prefer the local course and secondly Beira area and vice versa. Lisbon area players and from Alentejo prefer their area; on the other hand the ones from Algarve show preference to go along the country, being Lisbon and North zone the most referred ones.

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EVALUATION AND ANALYSIS OF GOLF GAME AND PORTUGUESE COURSES

ABSTRACT

The purpose of this study was to characterize the golfers and the golf-courses in Portugal. It was based on the gathering of facts made in 2006.This gathering consisted in the answering of two inquiries-one directed to the socio-economic characterization and the other to the nourishment profile of the golfers-as well as in observation and direct measurement of the golf-courses and the golfers.

The golfers were evaluated just before the competition and the follow items were determined: weight, stature, building, 4 skin folds (bicipital, tricipital, subscapular, supraspinal), in accordance with the proposed method. The values of the bio impedance were also measured and cardio-frequenceometres applied during the round. The sample was built out of 327 golfers, 46 being females.

The athletes were aged between 50 and 82 years old and body weight between 75 and 90 Kilos

Forty-three golf-courses were analized in detail;8 in Porto and north of Portugal,2 in Beiras, 14 in Lisbon, 1 in Alentejo and 18 in Algarve; in what concerns the nationality of the golfers, and the characteristics of the effort caused by one round as well as the mobility of the golfers at the golf-courses.

We have resorted to the SPSS statistics program, version 11,5 to treat the facts.

We carried out the describing statistics and tests of variation analysis. We also made the factorial analysis.

KEY WORDS: Golf, Golfers, Old age.

CARACTÉRISATION ET ANALISE DE LE JEUX DU GOLF ET LES TERRAINS DE GOLF AU PORTUGAL

RÉSUMÉE

L'objectif de cette étude-ci, a été de caractériser les joueurs et les terrains de golf au Portugal, à partir des données obtenues pendant l'année 2006. On est parvenu à ces résultats-ci par le remplissage de deux enquêtes: l'une visant la caractérisation sociale et économique et le profil compétitif et l'autre concernant le régime alimentaire des golfeurs. En outre, on a aussi observé et on a pris des mesurages soit aux joueurs soit aux terrains de golf. Les joueurs ont été évalués juste avant les compétitions et on a considéré les variables suivantes: le poids, la taille, l'envergure, quatre plis de la peau (bicipital, tricipital, sous-scapulaire, sur-spinal), selon la méthodologie proposée. On a mesuré aussi les valeurs de la bio-impédance et on a appliqué des fréquencemètres cardiaques pendant le tour. L'échantillon a été composé par 327 joueurs, en étant 46 du sexe féminin. L'âge des athlètes variait entre 50 et 82 ans et le poids entre 75 et 95 kg. En ce qui concerne les terrains de golf, on a analysé, en détail, 43.

MOTS-CLEF: Golf, Joueures, Vieillissement.

CATEGORIZACIÓN E ANALISE DO XOGO DE GOLFE E DOS SEUS CAMPOS EN PORTUGAL

RESUMEN

El objetivo del estudio fue caracterizar a los jugadores y los campos de golf en Portugal, basado en una recogida de datos, realizada en 2006. Esta recogida consistió en cubrir 2 cuestionarios - 1 dirigido a la caracterización socio-económica y al perfil competitivo del jogador de golf y otro al perfil alimenticio de los jugadores. Los jugadores fueron evaluados momentos antes de la competición y las variables analisadas: peso, estatura, envergadura, cuatro pliegues cutáneos (bicipital, tricipital, subescapular, supraespinal), Fueron también medidos los valores de composición corporal atraves de bioimpedancia y se

recogían las variaciones en la F.C durante los recorridos. La muestra estuvo compuesta por 327 jugadores, siendo 46 del sexo femenino. Los jugadores tenían edades entre 50 y 82 años y el peso corporal entre 75 y 90 kg. Con relación a los campos, fueron analizados detalladamente 43 campos, siendo 8 de la Zona Porto y Norte, 2 Zona das Beiras, 14 de la Zona de Lisboa, 1 de la Zona Alentejo y 18 de la Zona Algarve. En estes campos se analizaran la nacionalidad de sus jugadores, las características del esfuerzo provocado por el recorrido en cada campo, así como de la movilidad de los jugadores. Para realizar el analisis estadisco recorrimos al programa estadístico SPSS versión 11,5. Los resultados se presentan a nível descriptivo y posteriormente realizamos la inferencia estadistica. Realizamos las estadísticas descriptivas y los test de análisis de varianza. Procedemos aún al análisis factorial.

PALABRAS-CLAVE: Golf, Jugadores, Envejecimiento.

CATEGORIZACIÓN E ANALISE DO XOGO DE GOLFE E DOS SEUS CAMPOS EN PORTUGAL

RESUMO

O objectivo do presente estudo foi caracterizar os jogadores e os campos de golfe em Portugal, baseado na recolha de dados, realizada em 2006. Esta recolha consistiu no preenchimento de 2 inquéritos - 1 direccionado à caracterização sócio-económica e ao perfil competitivo e outro ao perfil alimentar dos jogadores, bem como em observações e medições directas dos campos e jogadores. Os jogadores foram avaliados momentos antes da competição e as seguintes variáveis determinadas: peso, estatura, envergadura, quatro pregas cutâneas (bicipital, tricipital, subescapular, supraespinal), conforme a metodologia proposta. Foram também mensurados os valores da bio impedância e aplicados cardiofrequenciometros durante a volta. A amostra foi composta por 327 jogadores, sendo 46 do sexo feminino. Os atletas apresentaram idades entre 50 e 82 anos e peso corporal entre 75 e 90 kg. Relativamente aos campos, foram analisados detalhadamente 43 campos, sendo 8 Zona Porto e Norte, 2 Zona das Beiras, 14 da Zona Lisboa, 1 da Zona Alentejo e 18 da Zona Algarve, quer a nível da nacionalidade dos seus jogadores, quer a nível das características de esforço provocadas por uma volta, bem como da mobilidade dos jogadores, pelos mesmos. Recorremos ao programa estatístico SPSS versão 11,5 para tratamento dos dados. Realizamos as estatísticas descritivas e testes de análise de variância. Procedemos ainda à análise factorial.

PALAVRAS-CHAVE: Golfe, Jogadores, Envelhecimento.