

## ملخص البحث باللغة العربية

يهدف هذا البحث الي التعرف علي كثافة وزمن الأداء الحركي لطلاب الجامعة بالسعودية من خلال حصص التربية البدنية بجامعة الملك فهد للبترول والمعادن بالظهران وذلك لاختلاف نظم التربية البدنية بها عن باقي الجامعات بالمملكة العربية السعودية.

وتنقسم الدراسة الي قسمين الأول يختص بدراسة زمن الأداء الحركي خلال حصة التربية البدنية واشتملت علي 246 طالبا وذلك لحساب المجموع الزمني للنشاط الرياضي الفعلي لكل طالب، اما القسم الثاني فيختص بكثافة الأداء الحركي التي يمارسها كل طالب في حصة التربية البدنية والذي اشتمل علي 237 طالبا وحصل الباحث علي استجابتهم خلال النشاط الرياضي في مختلف أيام الاسبوع واولقات السنة الدراسية لمختلف الألعاب (الكرة الطائرة - كرة السلة - كرة القدم ..... الخ).

وقد استخلص الباحث نتائج وتوصيات لتعميم البرنامج الخاصة باللياقة البدنية في جامعات المملكة العربية السعودية.

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as compared to students in skills activity classes in an Australian school study. Engaging in vigorous fitness and sports play at the university level may have carry-over health benefits such as reduced incidence of hypertension (Paffenbarger et al., 1983). This study demonstrates the need to assess parameters associated with gaining health/fitness benefits if attaining fitness is a goal of the curriculum such as it is at the University of Petroleum and Minerals in Dhahran, Saudi Arabia.

if the intensity of exercise is high, the duration should be low, while exercise with low intensity should continue for a longer period. Thus any physical education program with low intensity, duration, and frequency has limited effects in developing level. This fact of neglecting development of fitness in the school curriculum has been observed elsewhere such as in typical American physical education classes (Siedentop, 1983).

In another facet, individuals with low fitness levels, such as sedentary people, can obtain good physical benefits with exercise of 100 to 120 beats/min (90; Gledhill & Eynon, 1982). Consequently, according to Table 1, only basketball and football (soccer) students should improve their cardiorespiratory fitness level. The duration of exercise in basketball classes was still below the recommended level according to Figure 1, leaving only football (soccer) students who can adequately improve their physical fitness level according to the prescribed guidelines. This is probably due to the fact that the majority of students enjoy football exercise with more enthusiasm, and therefore are involved in greater movement. Another activity to consider for improved fitness of those students may be through swimming. Although the intensity is below the minimum prescribed level, it may be due to the horizontal body position which effectively increases stroke volume and results in reduced heart rate. From Figure 1, it can be seen that swimming resulted in motor engagement activity for the 15 minute minimum duration that is prescribed (ACSM, 1990).

In light of the above facts, we can conclude that physical education activity classes at university level in Saudi Arabia should include or be supplemented by some aerobic-type classes such as running-jogging, walking-hiking, rope skipping, bicycling, and longer swimming sessions such as lap swimming. These sports can develop the student's fitness level in addition to the other benefits ascribed to activity. Dwyer et al. (1983) demonstrated greater changes in physical working capacity, an index of cardiorespiratory fitness, in students engaged in vigorous fitness classes

predicted maximum heart rate for these students.

Normally, well-trained athletes and conditioned individuals have lower HR than sedentary people (Nieman, 1990) Average heart rates for males in this age range is 67 to 69 beats per minute, in contrast to the 75.6 beats per minute.

A slight upward shift of HR may occur in heat and this might have affected resting HR to a small extent although ambient temperature was not recorded. Another explanation for higher HR may be ethnic differences for Arabs compared to Europeans and Americans. or, these higher HR values reflect lower fitness in comparison to norms. Highly-trained athletes can have an HR as low as 30 beats per minute during rest (Karvonen et al., 1957). on the other hand, individuals with high resting heart rates are more likely to be unfit and possibly to develop cardiovascular disease . For instance, individuals whose HR is 60beats/ min or less have three times less chance of having a heart attack than individuals with HR of 80 beats/ min or more (keyes. 1980)

The average exercising HR in this study was 54.9% of the estimated max HR. This is below the minimum level of exercise intensity to be effective to develop and maintain the cardiorespiratory system . It has been documented that the intensity of eXercise should be between 60% and 90% of the max HR (ACSM, 1990) This means that only basketball classes met this requirement (Figure 1). However, the duration of exercise in basketball, 8.9 minutes, is still below the minimum recommended level for fitness improvement The recommended duration of exercise is between 15-60 minutes (ACSM,1990) It has been suggested that 80% of class time should and can be movement time (jenkings & staub, 1985) This. level versus the 30% of time involved in activity as reported by sie-dentop (1983) may elicit desired cardiorespiratory fitness benefits. Furthermore, the recommended frequency of exercise is 3-5 times per week, while the formal physical education activity classes at this university meet only twice a week

.The intensity of exercise was not greatly different between sports. Figure 2 shows that the lowest intensity was in badminton, which was 50% of the students estimated max HR. Next was tennis at 53% ; weight training, 53% volleyball, 55% ; football, 58% ; and the highest intensity, basketball, 63% of the students estimated max HR. These HR measures were taken right after the cessation of the activity for 10 seconds, not during movement because of artifact problems with the HR monitors. The duration and intensity of the different sports engaged in during formal physical education classes are presented graphically in Figure 1. Table depicts the resting, exercise, and predicted maximum heart rate these students.

## :DISCUSSION

Technology has provided us with very sophisticated equipment which has created a machine-dependent generation, statistics indicate that lack of physical activity, due to technology, has a significant correlation with cardiovascular disease, while exercise is one of the most effective means to prevent it (Gasner&McCdeary, 1982; Rissanen, 1975). As a corollary to this, school physical education curricula lack a strong fitness component (steinhardt&stueck, 1986).

Saudi Arabia is no exception. It is a very modernized and developed country. Technology has invaded even the smallest village. There have been empirical signs of physical movement due to the machine dependency. A mandate has been set to offset diminishing physical activity levels of the general population by formally instructing university students in physical education activity classes instead of offering just the usual recreational activities. It has been assumed that young people in Saudi Arabia are unfit because of the changes in lifestyle that have evolved. This is evidenced by the resting HR of the students in this study, 75.6 beats per minute. For young people whose average age is 20.3 years and who are involved in a physical education activity this is considered high and may generally represent low fitness. Table 1 depicts the resting, exercise, and

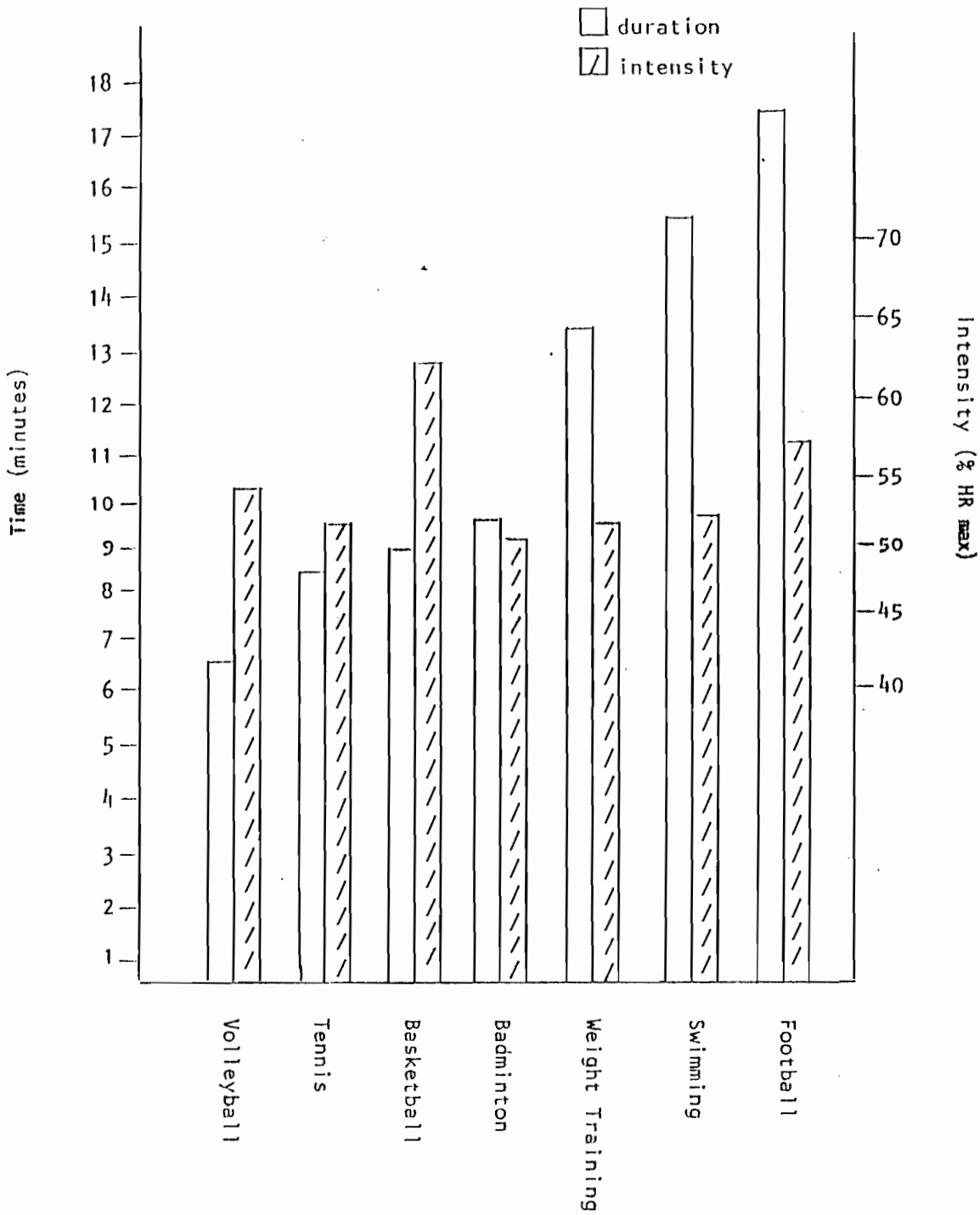


Figure (1) The duration and intensity of exercise in different sports



Table 1. Heart Rate Measurements in Saudi Arabian physical Education Activity Class

	Weight Training	Tennis	Football (Soccer)	Basketball	Volleyball
Resting Heart Rate (RHR)	70.2	77.9	80.8	74.0	71.4
Exercise Heart Rate (EHR)	105.1	104.3	114.9	125.6	109.2
Maximal Heart Rate (MHR)	199.2	198.5	200.2	199.6	199.1

All values are means and expressed as beats per minute; RHR is pre-exercise after a ten minute rest; EHR is the average of 3 10-second HR during the activity; MHR is predicted from the equation,  $(220 - 1ge$

other such sports movements, or when he was listening to the teacher's instruction. when he resumed playing, the stop watch would start again.

The second part focused on intensity of exercise in the physical education classes. observations were made on 237 students. The teachers and students were informed only about the comparison of intensity between the different sports and were asked to continue with their regular routine. The teachers informed the students as they came to the class to sit down calmly for ten minutes. A PU-102 pulse meter, pencils, and recording forms were distributed to the students. The minutes after the official start of the class, the students were asked to take the first measurement of their hert rate (HR) and to record it. Additionally, students Were asked to write down their age which was used to estimate their maximum HR (220-age). Then, the normal class routine began and students were monitored as they engaged in motor activities for that class. Students were asked three times during the class to measure their exercising HR At least a 10 minute interval eiapsed between the readings.

Both parts of the study were conducted at various times of the day, on different days of the week, and at different academic levels throughout the academic year. Both parts included volleyball, basketball, footbair (soccer), tennis, weight training, badminton, and swimming.

## RESULTS:

In the firat, duration of exercise, the results showed differences among the different sports. As indicated in Figure 1, the duration of exercise in volleyball was the lowest, 6,5 minutes; followed by tennis, 8.4 minutes; basketball, 8, minutesbad minton9.6 minutes;weight training,13.3 minutes; swming,15.4. minutes and the highest dduration, football (soccer), 17.5 minutes.

The physical education program at this university is unique in that it follows the physical education activity classes model rather than the typical recreational activity programs offered at other universities within Saudi Arabia.

The traditional belief of discipline and organization, which emphasizes controlling the movements of students according to a specific outline, has restricted the freedom of exercise and limited the potential fitness benefits. Siedentop (1983) has reported that motor activity or motor engagement time occurs for a maximum of 30% of total class time. Motor engagement time includes: skill practice, drills, scrimmages, games, and fitness activities plus warm-up and cool-down. The remainder of class time in physical education is divided among management and information dissemination.

Undoubtedly, in such a routine, the basic skills, rules, and other related educational principles are taught more easily, while physical movement, however, is reduced.

The aim of this study is to describe the intensity and duration of motion activity of university students in structured physical education classes in Saudi Arabia.

#### **METHODS:**

The study was divided into two parts. The first part focused on the duration of exercise in the physical Education (PE) classes at the University of Petroleum and Minerals (UPM) in Dhahran, Saudi Arabia. In this part, 246 students were observed. Neither the students nor the teachers were of the study and the observations taken. In every class, several observers were assigned randomly to monitor the same number of students. Observations were taken only from the time the teacher started his official class to the time he finished the class. At the end of the class, the total time of exercise was registered. Every student was watched closely by an observer using a Heuer-Leonidar SA stop watch. The stop watch was stopped any time the student stopped playing. Because the ball was away from him, he was waiting for his turn to shoot, jump, or throw, among

## **Physical Education Classes developed the fitness of participants in Saudi Arabia**

Dr, Ali Abu Saleh

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### **INTRODUCTION:**

It is believed that the aim of physical education activity classes is to improve the students fitness level and skill level in addition to the other values such as recreational, social, educational, and mental values.

However, the degree of effectiveness varies widely among different physical education programs, and is influenced greatly by the quality of teachers, equipment, type of sports, facilities, and environment, in addition to age, gender, quality, and number of students in class. still, one of the prime objectives of the physical education program in Saudi Arabia is the development of the students health.

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