

Biology

Name

Institution

**What Authors Did**

Paffenbarger, Wing, and Hyde (1978) analyzed the relationship between the risk of heart attack and physical activity. Physiological research suggests a positive correlation between decreased prevalence of heart-related disease and getting adequate physical activity. However, Paffenbarger, Wing, and Hyde used the notion of high heart attack risks due to physical activity as the purpose of their research. Physical activity is a way of reducing heart-related diseases, particularly those that are chronic in nature. The authors conducted a study by contacting Harvard alumni students from who attend the university from 1916 to 1972. They received responses from 16,936 students who answered questionnaires, which is how the authors collected data for the study. The data was then used to explain the relationship between getting physical exercise and risk of heart attack among patients (Paffenbarger, Wing, & Hyde, 1978).

**Study Design and Sample Frame**

Harvard University alumni who participated in the study were male with an average age of 58 years old. The research questionnaires were distributed to participants between 1962 and 1966 (Berlin & G.A, 1990). The participants had no previous cardiac-related illnesses. Statistics on their physical activity were gathered via the questionnaires, and details focused on when the men were students and then when they became middle aged. Harvard's athletics history also provided information on the participants. The completed questionnaires contained data on physical activity such as climbing stairs, hiking, sporting and other recreational activities. The questionnaires also provided data on hereditary diseases, tobacco use, and information on any disease diagnoses. Additionally, the questionnaires gave assessments on heart attack rates, and death certificate analyses identified heart attack deaths for the purpose of the study. Follow-up questionnaires were sent to the participants in 1972, 1988 and 1993, to collect heart-related disease, chronic disease, and death information. A

physical index was created to measure physical activity levels of the study participants. These indices showed values of each type of physical activity according to how much energy was expended. The physical activities in which the participants engaged ranged from strenuous to light sports activities, and energy use for each activity was recorded (Blair, LaMonte, & Nichaman, 2004).

### **Risk Factors Defined**

According to the study results of this research, it appears that physical activity can indeed reduce the incidences of heart disease. The lack of adequate physical activity, however, combined with other factors such as hypertension and smoking, could lead to heart attack risks. The study also revealed that some life styles may put people at risk for heart disease. For example, the Harvard alumni in the study who had parents with well-paying jobs at the time they attended college were at lower risk for having heart attacks. This may have been because these former students had better access to healthier life styles as well as better access to healthcare (Rundle, Hagins, Orjuela, Mooney, Kim, & Perera, 2007). The study results also revealed that even with physical exercise, if a person is a smoker, then this could lead to stress, which is a risk factor for heart disease. In addition, the study participants' eating habits while attending the university were unknown; however, their nutrition and social lives were also factors in their heart disease risks. Based on study findings, it is noted that physical activity can help reduce chronic diseases, such as heart disease. The study results also revealed that the participants who were athletes while they were students, but were inactive during middle age, were at higher risk of developing heart disease than those who maintained physical activity levels to middle age.

### **Measurement of Variable Outcomes**

Variables measured included energy use versus heart attack risk. The authors utilized the physical index to measure questionnaire data. They recorded each participant's body

mass, and this helped generate energy expenditure per body mass. They also recorded each participant's weekly activity, as well as hours spent engaging in physical activities. By using the physical activity variables, a metabolic rate was developed to measure energy expenditures for each physical activity (Sesso & Ralph Paffenbarger Jr, 2000).

**References**

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