The Effects of Education on Lifestyle Modification

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The Effects of Education on Lifestyle Modification

Courtney J. Taylor

Carroll College
This thesis for honors recognition has been approved for the Department of Psychology.

Director

Date

Reader

Date

Reader

Date
Abstract

The VA Hospital’s diabetes prevention program assessed ten veteran’s ability to adopt lifestyle modifications through individualized versus group educational programming. The hypothesis was that there would be a difference in the adoption of lifestyle modifications between two education programs as measured by weight reduction, waist circumference, and physical activity levels. The results did not indicate significant differences in adopting lifestyle modifications between the two groups. The results are discussed in terms of reasons why there were no differences between the individual and group educational programs including the small sample size, duration and time of year of the intervention, and problems with consistency in determining adequately the physical activity of participants.
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The Effects of Education on Lifestyle Modification

Diabetes is a serious and costly disease affecting 18.2 million people in the United States with 1.3 million new cases diagnosed a year (CDC, 2005). With the overwhelming number of people potentially afflicted with complications or risks of development of the disease, research on the feasibility and benefits of prevention or delay of Type 2 diabetes has been paramount. The physical therapy department, a group of clinicians, of Fort Harrison VA initiated a diabetes prevention program. This program researched the relationship of primary prevention of diabetes and lifestyle changes in the veteran population.

The performance improvement assessment at the VA Hospital was created in response to no previous diabetes prevention studies being conducted within the veteran population. The hypothesis of this research was that there would be a difference in lifestyle modification as a function of individualized or group education programs.

Review of Literature
Today our health care system is being heavily inundated with individuals who have Type 2 diabetes mellitus (Lindstrom, J., Loutheranta, A., Manknelin, M., Rastas, M., Salminen, V., & Eriksson, J. et al., 2003). Type 2 diabetes occurs when insulin receptors in the body are unable to respond to insulin which is known as insulin resistance (Marieb, 2004). In essence, a person developing diabetes has impaired glucose tolerance (IGT) because their body does not use insulin correctly. The overall problem with diabetes is determining how to prevent the disease before it affects the individual. This literature review will address the question: Is diabetes preventable through lifestyle modification. Three studies will be examined as to their effectiveness in diabetes prevention through
The Effects of lifestyle modification and are as follows: The Finnish Diabetes Prevention Study; Diabetes Prevention Program; and The Da Qing IGT and Diabetes Study.

Lindstrom's research in the Finnish Diabetes Prevention Study (DPS) was one of the first controlled, randomized studies to show that diabetes mellitus is preventable with lifestyle intervention. The study assessed both short and long-term changes in diet and exercise behavior and additionally observed the effects of the intervention on individual plasma glucose and lipid levels. Another objective of the study was to perform research in a setting which could be applied to any primary health care unit (Lindstrom, J. et al., 2003); (American Diabetes Association, 2005).

The study was conducted on a sample of 522 middle aged, obese subjects with impaired glucose tolerance (IGT). These individuals were randomly assigned to two separate groups; the standard care control or an intensive lifestyle intervention group. The control group received brief diet and exercise counseling at regular annual physician examinations. The intervention group received intensive individualized instruction on weight reduction, food intake, and guidance on increasing physical activity from trained professionals such as nutritionists. In the dietary intervention, the subjects met with the nutritionist for 30-60 minute visits weekly, for seven weeks, and follow-up visits every three months for the duration of the study. Dietary food advice was based on three day food records that were completed four times within the one year intervention. Participants received individual guidance on adopting an exercise program. Circuit-type resistance training sessions were offered to participants in order to improve individual function and strength of large muscle groups. In this type of training, participants rotate through a circuit of exercises and were encouraged to perform moderate to high numbers
The Effects of

of repetitions and take 15 to 60 second breaks between stations in the circuit. The study had an average follow-up period of 3.2 years (Lindstrom, J. et al., 2003).

The types of moderate or high-intensity physical activity encouraged in the study included: brisk walking, skiing, jogging, swimming, and ball games etc. A specific type of exercise, promoted by the study, was brisk walking for at least 30 minutes a day in addition to the other activities previously listed (Lindstrom, J. et al., 2003).

The first year of instruction informed individuals on diabetes risk factors, saturated fat, fiber, physical activity, and problem solving. The main goals of the lifestyle intervention were to minimize diabetes risk factors by increasing reduction in weight (greater than or equal to 5 percent), moderate intensity physical activity (greater than or equal to 30 minutes a day), and lowering intake of dietary fat (less than 30 proportion of total energy), saturated fat (less than 10 proportion of total energy), and fiber (greater than or equal to 15 grams per 1000 kilocal diet) (Lindstrom, J. et al., 2003).

The study had an average follow-up of 3.2 years with a success of 58 percent relative reduction in the incidence of diabetes in the intervention group when compared to the control group. The lifestyle intervention produced long-term changes in diet and physical activity in order to reduce the risk of developing diabetes. In the study, the intervention group had significant improvements in each intervention goal when compared to the control group. After a one and three year period, the trial individuals in the intervention group had averaged accumulated weight loss of 4.5 and 3.5 kilograms (kg) respectively; in comparison to the control group which had an average loss of 1.0 and 0.9 kg (Lindstrom, J. et al., 2003); (American Diabetes Association, 2005).
The Diabetes Prevention Program (DPP) study chose subjects younger in age and more obese, but having similar glucose intolerance tests compared with subjects of the Finnish study. One of the DPP’s goals was to include a diverse population consisting of half of the participants being from racial or ethnic minority groups to observe if the intervention was able to prevent diabetes in a diverse population. The study was actually administered to 1,079 participants, 45 percent being racial and ethnic minorities over a period of 24 weeks. The average age of individuals was 51-years-old and 68 percent of the study population consisted of women. The study also included a range of education among its participants having 25.8 percent of the population having more than 13 years of education, 48.1 percent having 13-16 years, and 26.1 percent having greater than 17 years of education. The study included 27 randomized centers for clinical trials to determine whether lifestyle intervention or the drug metformin would prevent or delay the onset of diabetes in individuals with IGT (DPP, 2002); (American Diabetes Association, 2005).

The DPP included two intervention groups within the study. The two interventions were a lifestyle group and a metformin medication group. The lifestyle group received intense nutrition and exercise instruction. Participants in the lifestyle group attended 16 individual educational sessions covering diet, exercise, and behavior modification. In addition, participants were encouraged to engage in physical activity of moderate intensity, such as brisk walking, for at least 150 minutes per week. In the study, the drug metformin (prescribed twice daily at a dose of 850 mg) was combined with standard recommendations including written educational material yearly and one 20-30 minute session stressing the importance of a healthy lifestyle. The control group received the same educational interventions as the metformin group plus a placebo pill (DPP, 2002).
Participants in the lifestyle group were given the following two goals; to lose a minimum of seven percent of their weight and engage in a minimum of 150 minutes of physical activity a week that was of similar intensity to walking. The curriculum was designed to assist participants in meeting the two lifestyle goals of the study. Group exercise classes were offered but not required of participants in the lifestyle group. Walking was encouraged because it was an inexpensive exercise most participants would have access to. The overall average goal for weight loss in participants was to lose .45 to .91 kg a week. Physical activity was seen as important for long-term weight loss maintenance and as a way to possibly prevent diabetes (American Diabetes Association, 2005); (DPP, 2002).

Lifestyle coaches, mostly dietitians, responsible for 40 participants each, were assigned to educate, aid in maintenance, and motivate each individual for adherence of both lifestyle and medication groups. In the study, the lifestyle coaches had frequent contact and standardization was established through structured individualized interventions where case managers met on a one-to-one basis during the first 24 weeks after enrollment. The core curriculum consisted of 16, 30 minute to one hour lessons on diet and lifestyle modification. In addition, participants received follow-up visits (usually monthly) for the duration of the study. (DPP, 2002).

The DPP had an average follow-up period of 2.8 years with a success rate of 58 percent relative reduction in the incidence of diabetes in the lifestyle group and 31 percent in the metformin group. The lifestyle group had an average weight loss of 5.45 kg at a two year benchmark (mean weight loss for study was 5.45 kg or 6 percent of body weight) and an average of 4.09 kg at three years. Subjects involved in the lifestyle group were more
active than those in the metformin and control groups (American Diabetes Association, 2005); (DPP, 2002).

The Da Qing study observed individuals who had impaired glucose tolerance (IGT) and were at high risk of developing diabetes mellitus. The purpose of this study was to observe the effects of diet and exercise on the incidence of diabetes (Xiao-Ren, P., Guang-Wei, L., Ying-Hua, H., Ji-Xing, W., Wen-Ying, Y., & Zuo-Xin, A., 1997).

In 1986, 557 individuals from Da Qing, China, agreed to participate in a randomized controlled trial to better understand the effects of diet and/or exercise in the incidence of diabetes. Thirty-three health care clinics were selected to investigate the effects of diet and exercise interventions separately and in combination of the occurrence of diabetes in people with IGT (Xiao-Ren, P., 1997).

Individuals with IGT were randomly assigned by each of the clinics to either a control group or to one of three intervention groups. The three treatment groups in the study consisted of a diet-only group, exercise-only group, and a diet-plus-exercise group (Xiao-Ren, P., 1997).

In Da Qing, clinics assigned to the diet-only intervention encouraged subjects, with BMIs of less than 25 kg/m2, to consume vegetables, control intake of alcohol, and reduce their intake of simple sugars. In the Da Qing study, “subjects with BMIs greater than 25 kg/m2 were encouraged to decrease caloric intake to gradually lose weight at a rate of .5-1.0 kg per month to reach a BMI of 23 kg/m2” (American Diabetes Association, 2005, p. 538). Individuals received counseling by physicians concerning daily food intake, attended weekly sessions for one month, monthly for three months, and then once every three months for six years (Xiao-Ren, P., 1997).
Individuals in the exercise-only group were taught and encouraged to increase the amount of leisure physical exercise per day throughout the study. The exercise-only group, held the same scheduled counseling sessions as the diet-only group, holding sessions weekly for one month, monthly for three months, and then once every three months for the remainder of the study. “The amount and type of exercise that was recommended depended on age, past exercise patterns, and the existence of health problems other than IGT” (Xiao-Ren, P., 1997, p. 539).

The Da Qing clinics who were assigned to the diet-plus-exercise group gave instructions and counseling on both diet and exercise to all participants. The combined intervention was very similar in nature to those of the diet-only and the exercise-only intervention groups.

The control group received general information about diabetes and IGT. “In this group, physicians gave out general information on exercise and diet but, no individual instructions were given or group sessions provided” (Xiao-Ren, P., 1997, p. 539).

The study tested individuals two times a year over a period of six years. The report found that the cumulative incidence of diabetes was 67.7 percent in the control group compared with 43 percent in the diet-only group, 41.1 percent in the exercise-only group, and 46 percent in the diet-plus-exercise group. The authors concluded that diet and/or exercise interventions among individuals with IGT lead to a decrease in the incidence of diabetes over a six year period (American Diabetes Association, 2005).

The three previously discussed studies provide evidence that Type 2 diabetes mellitus can be delayed or prevented through lifestyle modification.

The study of preventing diabetes through lifestyle modification has helped
researchers to understand the possible increase in quality of life and risk for diabetes in numerous individuals. Diabetes is preventable or delayed due to interventions such as education in physical activity and diet, but if lifestyle modification does not occur, then individuals have a greater chance of developing the disease. The disease complications consist of cardiovascular, renal, and retinal disease, but can and will lead to death if complications persist without treatment (American Diabetes Association, 2005); (Xiao-Ren, P., 1997).

The results of the Finnish, DPP and Da Qing studies present the argument that diabetes prevention needs to be studied further. These studies have also demonstrated that the current standard of care (control groups) do not provide adequate lifestyle modification interventions sufficient for diabetes prevention or delay.

The challenge for the health care system today is to develop and integrate behavioral based diabetes prevention programs. Further research is needed to determine the most efficient, effective, and economical way to provide the interventions to those at risk (The Diabetes Prevention Research Group, 2003).

The difficulty in integrating and development of diabetes prevention program has been directly related to diabetes health care costs. In 2002, diabetes reached an estimated economical cost of $132 billion, with $92 and $40 billion being due to direct medical and indirect costs respectively (CDC, 2005).
Methods

Participants
Participants were 22 adult veterans, average age 64.5, who were patients at Fort Harrison (VA Hospital). Participants were identified and selected for having fasting blood glucose levels of 100 mg/dL to 125 mg/dL through a chart review using the VA Montana Computerized Patient Record System. Following selection, participants were invited to attend educational sessions on exercise and diet. The first 10 participants were assigned to an educational session using group activities (Group A). The remaining 12 participants were encouraged to participate in either Group A or an individualized educational program (Group B). The initial recruitment in the educational programs yielded a final distribution of 13 participants in Group A and nine participants in Group B. Of the initial 22 participants, data from nine males and one female were analyzed for this performance improvement assessment. Those participants that were not included in the performance improvement assessment include one participant who died due to health problems, one participant who developed diabetes and ten others who had insufficient data.

Procedure
Once participants were assigned to Group A or Group B and enrolled in the educational programs, attendance was required.

The dietary instruction curriculum educated veterans in self-monitoring food intake, accurately reading food labels, and promoted healthy cooking methods. Veterans were instructed in monitoring food portion size and rates of consumption. Additionally, participants were encouraged to complete a food journal.

The curriculum for physical activity consisted of education in self-monitoring exercise and the role of exercise in the prevention of diabetes. Physical activity parameters
were individually provided to veterans. Participants were instructed in proper footwear and encouraged to integrate exercise into lifestyles.

Participants in Group A using the educational curriculums of diet and physical activity met in a class-oriented setting. Group A meeting times were held one night a week for the month of September. The educational sessions were instructed by physical therapists, dieticians, and nurses in a VA conference room.

Participants in Group B used the same educational materials as Group A but utilized individualized instruction. Participants in Group B scheduled individual appointments with physical therapists and registered dietitians for one hour a week for the month of September. Group B participants were instructed in the physical therapy and dietetic departments by the same professionals as Group A.

Both Group A and Group B were encouraged to maintain frequent contact with instructors during classes, appointments, and after the period of intervention on a monthly basis for three months. Each participant was assigned to a group leader for weekly discussions, individualized goal setting, and post-class follow-up visits.

Data collection from Group A and Group B occurred one week prior to the beginning of the program. The second data collection occurred one month later. The final measurement recordings were taken after two months. Each participant’s weight, height, waist circumference, and the Modifiable Activity Questionnaire (MAQ) (see Appendix) results were gathered during each data collection period. This questionnaire assessed the previous seven days of physical activity in occupation and leisure activities. The hypothesis of this performance improvement assessment was tested by specifically measuring the weight, waist circumference, and MAQ results of each participant.
Materials
The diabetes prevention program data was collected for each participant at the VA Hospital where the Physical Therapy Department, medical lab, and other patient screening areas were utilized. The data was collected by a physical therapist and the author. The instruments used to perform the performance improvement assessment included a calibrated scale, a standard height scale, and a measuring tape to measure waist circumference. An additional component used in the performance assessment was the MAQ.

The MAQ was designed for easy modification to maximize the ability to assess physical activity in a variety of populations (Williams & Wilkins, 1997). The questionnaire was initially designed to assess the activity patterns of Native Americans in order to evaluate a relationship between physical activity and diabetes (Kriska, A., Knowler, W., LaPorte, R., Drash, A., Wing, R., & Blair, S. et al., 1990).

The MAQ questionnaire assessed past-week occupational and leisure activities among veteran participants at each testing period. The total hours per week of each activity was multiplied by the metabolic equivalent of each activity (MET) resulting in metabolic hours/week for each activity. The metabolic hours/week were then summed for each activity.

One MET represents the metabolic rate of an individual at rest (3.5ml/kg/min). This unit can be used to represent the amount of energy exerted for specific activities (The Diabetes Prevention Program Research Group, 2002). For example walking at a rate of 2.5 mph, on a firm surface requires 3.0 MET (Ainsworth, B., Haskell, W., Whitt, M., Irwin, M., Swartz, A., & Strath, S. et al., 2000).
Results

The hypothesis was that a difference in the adoption of lifestyle modifications between the two educational programs would be measured by weight, waist circumference, and MAQ levels. Data analysis comparing differences between pre-test scores and second post-test scores using repeated measures analysis of variance (RMANOVA) did not indicate significant differences between Group A and Group B for any of the three variables.

Means for individual weight in Group A were 199.7, 198.4, and 199.22 pounds in the pre-test, post-test, and second post-tests respectively. The means for physical activity using the MAQ in Group A were 129.95, 125.134, and 64.484 units of exercise (MET-hours-per week). Means for Group A waist circumferences were 41.1, 40.9, and 41 inches.

Means for Group B individual weights were 247.16, 245.32, and 244.42 pounds in the pre-test, post-test, and second post-tests respectively. The means for physical activity in Group B using the MAQ were 115.3, 90.708, and 31.298 MET. Means for Group B waist circumferences were 48.2, 47.4, and 47.15 inches respectively.

Comparison of changes in weight, waist circumference and MAQ measures from the pre-test to the final post-test indicated no significant differences between Group A and Group B.
Discussion

As Type 2 diabetes has reached a "national epidemic" level, research has verified that the disease can be prevented (Goldberg, Z., 2006). The Fort Harrison's (VA Hospital) performance improvement assessment examined the differences between individual and group educational programming on lifestyle modification (the adoption of physical activity or diet lifestyle changes).

The results of the performance improvement assessment comparing the two educational programming strategies did not show significance. Individual and group educational programming did not produce different lifestyle modifications in participants at the VA Hospital as measured by weight, waist circumference, and physical activity levels.

The three studies, The Finnish Diabetes Prevention Study (DPS), Diabetes Prevention Program (DPP), and The Da Qing IGT and Diabetes Study examined in the literature review, demonstrated that type 2 diabetes mellitus can be prevented or delayed through lifestyle modification.

Both the DPS and DPP had success rates of 58 percent relative reduction in the incidence of diabetes in the intervention group when compared to the control groups. The DPP, additionally, found the lifestyle intervention to be more effective in diabetes prevention or delay than medication. The Da Qing Study, which tested participants over six years and found the incidence of diabetes to be 67.7 percent in the control group compared with 43 percent in the diet-only group, 41.1 percent in the exercise-only group, and 46 percent in the diet-plus-exercise group.
This performance improvement assessment was performed at the VA Hospital because there had been no previous diabetes prevention studies performed among the veteran population. The purpose of this performance improvement assessment was to assess the differences in educational programming (individualized versus group) in assisting veterans to adopt lifestyle modifications. The reasons why this performance improvement assessment did not produce similar results to previous research may have been due to the small sample size, implementation incentives for participation, the duration and time of year of the program, and difficulties with measurements. The small sample size of the performance improvement assessment did not produce significant results throughout the time frame of the one month intervention and one month follow-up visit in the adoption of lifestyle modifications. A large population size and funding for long-term assessments were beyond the scope of the performance improvement assessment.

Twenty-two adults, out of 97 individuals, identified for high fasting glucose levels (having ranges between 100 mg/dL and 125 mg/dL) agreed to participate in the performance improvement assessment by responding to phone calls and program fliers. Those not included in the final data results were ten participants who had insufficient data, one participant who died, and another who was diagnosed with diabetes. The number of individuals who had insufficient data may be due to the hospital placing payment responsibilities for the educational programming and follow-up visits on the participants and the repetitive nature of the data collection of the performance improvement assessment. A recommendation for the program would be to provide incentives as an opportunity for participation.
The number of total participants in the performance improvement assessment (9 males-1 female) was not a large representative sample of the veteran population. The small sample size may have contributed to the overall results that did not demonstrate a significant difference in individualized versus group educational programming in the adoption of lifestyle modifications among veterans.

The ten participants in the performance improvement assessment had a limited period of time to show significant lifestyle modifications in weight reduction, waist circumference reduction, and changes in levels of physical activity. The performance improvement assessment consisted of a one month intervention period and a one month follow-up visit which may have been insufficient time frames to show lifestyle modifications among veterans and contributed to the non-significant results in finding no differences in educational programs.

In addition to the time frame, the time of year at which the performance improvement assessment was performed may have also been a variable in contributing to the results of the performance improvement assessment. The performance improvement assessment began in September and ended shortly in November. The time of year at which the performance improvement assessment was performed may explain why physical activity decreased throughout the duration of the programming. In Montana, as the Fall ends, colder weather persists and outside activities become less frequent. As physical activity decreased, diet alone then could have resulted in reduction in weight and waist circumference if these two variables had produced significant changes during the intervention. As there were no significant lifestyle modifications as indicated by changes in weight, waist circumference, and physical activity in both educational programs, the
time of year may have contributed to the results.

The use of the MAQ to determine changes in physical activity among veterans during each data collection period produced difficulty. The questionnaire may not have been valid in assessing the previous seven days of physical activity in occupation and leisure activities among each individual. As participants engaged in different exercise activities, durations may have been recorded which corresponded with other participants, but intensity of each exercise was not determined. Therefore, an individual who performed a physical activity for an hour at a high intensity could have been scored the same MET level as an individual who performed the same physical activity for an hour at a lesser intensity because intensity was not adequately determined by interviewers administering the MAQ. The MAQ tool requires practice for interviewers to determine reliable levels of physical activity performed by participants. The interviewer’s reliability in consistent questions being asked between interviews needs further review as specific exercise and exertions were not adequately determined for every participant. The interviewer’s inconsistency in questions being asked for the MAQ may have contributed to the non-significance of the results comparing the two educational programs.

This performance improvement assessment demonstrated no difference in the adoption of lifestyle modifications between individual and group educational programming. The scope of the performance improvement assessment only included a small sample size (10 individuals) and a short-term intervention period of one month and a month-later follow-up visit. Currently, further research is needed on the topic of educational programming (individual versus group) in the success of the adoption of lifestyle modifications in the veteran population.
Future recommendations for the continuation of this performance improvement assessment include providing educational programs that are free of charge. The program should also have a longer follow-up period to be able to more accurately assess individual’s adoption of lifestyle modifications. Additionally, further research, with larger sample sizes, in individual versus group education should be examined to determine the overall efficiency of educational programming in the adoption of lifestyle modifications.

The intervention period could possibly be extended for participants to adopt lifestyle modifications. The previous studies reviewed in the review of literature discuss a longer implementation period for the performance improvement assessment which may have contributed to the participant’s success in adopting lifestyle modification.

The results of this performance improvement assessment did not demonstrate that different educational programs produced differences in the adoption of lifestyle modification. This being said, hospitals could then provide more cost effective programs using group education.

The development of future educational programming focusing on the recognition of precursors to Type 2 diabetes and effective lifestyle modifications could produce significant prevention outcomes.


The Diabetes Prevention Program Research Group.(2003). Within-Trial Cost-Effectiveness of Lifestyle Intervention or Metformin for the Primary Prevention of Type 2 Diabetes. *Diabetes Care, 26*(9), 2518-2523.


Appendix

Modifiable Activity Questionnaire

1. Please circle all activities listed below that you have done in the past week:

<table>
<thead>
<tr>
<th>Activity</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jogging (outdoor, treadmill)</td>
<td>1</td>
</tr>
<tr>
<td>Swimming (laps, snorkeling)</td>
<td>2</td>
</tr>
<tr>
<td>Bicycling (indoor, outdoor)</td>
<td>3</td>
</tr>
<tr>
<td>Softball/Baseball</td>
<td>4</td>
</tr>
<tr>
<td>Volleyball</td>
<td>5</td>
</tr>
<tr>
<td>Bowling</td>
<td>6</td>
</tr>
<tr>
<td>Basketball</td>
<td>7</td>
</tr>
<tr>
<td>Skating (roller, ice, blading)</td>
<td>8</td>
</tr>
<tr>
<td>Martial Arts (karate, judo)</td>
<td>9</td>
</tr>
<tr>
<td>Tai Chi</td>
<td>10</td>
</tr>
<tr>
<td>Calisthenics/Toning exercises</td>
<td>11</td>
</tr>
<tr>
<td>Wood Chopping</td>
<td>12</td>
</tr>
<tr>
<td>Elliptical</td>
<td>13</td>
</tr>
<tr>
<td>Walking for exercise (outdoor, indoor at mall or fitness center, treadmill)</td>
<td>40</td>
</tr>
</tbody>
</table>

2. In general, how many HOURS per DAY do you usually spend watching television? hrs

3. Do you have difficulty doing any of the following activities?
   a. Getting in or out of a bed or chair?
   b. Walking across a small room without resting?
   c. Walking for 10 minutes without resting?

<table>
<thead>
<tr>
<th>Activity</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. Did you ever compete in an individual or team sport (not including any time spent in sports performed during school physical education classes)?

   If yes, how many total years did you participate in competitive sports?
5. Do you have a job or did you work this week?

List all JOBS that the individual held over the past week. If unemployed/disabled/retired/homemaker/student during all or part of the past year, list as such and probe for job activities of a normal 8 hour day, 5 day week.

<table>
<thead>
<tr>
<th>Job Name</th>
<th>Job Code</th>
<th>Min/Day</th>
<th>Days/Wk</th>
<th>Hrs/Day</th>
<th>Hrs Sitting</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
</table>

**Category A**

(Includes all sitting activities)

- Sitting
- Standing still w/o heavy lifting
- Light cleaning - ironing, cooking, washing, dusting
- Driving a bus, taxi, tractor
- Jewelry making/weaving
- General office work
- Occasional/short distance walking

**Category B**

(includes most indoor activities)

- Carrying light loads
- Continuous walking
- Heavy cleaning - mopping, sweeping, scrubbing, vacuuming
- Gardening - planting, weeding
- Painting/Plastering
- Plumbing/Welding
- Electrical work
- Sheep herding

**Category C**

(heavy industrial work, outdoor construction, farming)

- Carrying moderate to heavy loads
- Heavy construction
- Farming — hoeing, digging
  — mowing, raking
- Digging ditches, shoveling
- Chopping (ax), sawing wood
- Tree/pole climbing
- Water/coal/wood hauling

**Job Codes**

**Not employed outside of the home:**

1. Student
2. Home Maker
3. Retired
4. Disabled
5. Unemployed

**Employed (or volunteer):**

6. Armed Services
7. Office worker
8. Non-office Worker
Authors Note

Courtney J. Taylor, an undergraduate student at Carroll College.

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