

Physical Activity Among Organ Recipients: Data Collected From the Latin American Transplant Games

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ABSTRACT

Background. Cardiovascular complications after transplantation are an important cause of non-transplant-related deaths. Depression and anxiety are not unusual among organ recipients. Physical activity reduces cardiovascular risk and promotes a sensation of well-being. The aims of the study were to examine how exercise affects psychological well-being sensation in organ recipients and to describe the physician’s role in promoting and controlling safe sport training in transplanted patients.

Methods. A descriptive study was conducted. A questionnaire was answered by participants of the “2012 Latin American Transplant Games.”

Results. One hundred sixty-six organ recipients completed the questionnaire. Eleven percent heard about the transplant games from a physician. Seventy percent had not received a proper medical pre-competitive evaluation. Only 39% trained in a supervised manner and 53% had experienced some kind of sport-related injury. Self-perception of global health was reported as excellent by 19.75%, very good by 43.95%, good by 30.67%, and regular or poor by 5.73%. An excellent or very good health perception was reported by 47.8% of those who practiced only one kind of sport versus 71.5% of those who practiced more than one sport and by 89.6% of those who performed isometric activity versus 59.3% of those who did not perform isometric activity.

Conclusions. Diversity of practiced sports and isometric activity are associated with a better self-reported health condition. Most participants had not received a proper medical pre-competitive evaluation; they trained in an unsupervised manner, and injuries were common.

ORGAN transplantation (OT) is a life-saving procedure for patients with end-stage organ disease. Modern surgical techniques and new immunosuppressive regimens have resulted in significant improvements in short-term survival. It seems reasonable, then, to address the long-term complications of organ recipients.

Cardiovascular complications after OT are an important cause of non-transplant-related deaths [1]. The 5-year mortality rate from cardiovascular disease in cardiac and kidney transplant recipients is 30% and 15%, respectively, with an overall mortality rate of at least 5- to 10-fold higher than the general population [2]. Obesity, hypertension, hyperlipidemia, muscle weakness, reduced aerobic capacity, and decreased exercise tolerance are prevalent among OT

recipients because of prolonged bedrest, inactivity, immunosuppressive regimens, and a sedentary lifestyle [3–8]. In fact, levels of fitness and strength are below the age-expected values in organ recipients [9]. Psychological consequences of chronic illness may be profound. Depression and anxiety are not unusual among organ recipients.

Physical activity has proven beneficial effects on every component of the metabolic syndrome and clearly reduces cardiovascular risk. Exercise also stimulates mental health

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Table 1. Participant Characteristics

Mean age (\pm SD)	41.8 (\pm 13.4) years
Sex	Male. 67.47%; female, 32.53%
Transplanted organ	Kidney, 67.9%; liver, 13.58%; heart, 6.17%; kidney + pancreas, 3.09%; bone marrow, 3.09%; other, 6.17%
Most common immunosuppressive treatment	Mycophenolate, 67.4%; tacrolimus, 52.4%; prednisone, 47.6%; cyclosporine, 16.3%
Mean time from transplant to participation in the games	95 \pm 66 months

and promotes a sensation of well-being [10]. Exercise training has been shown to improve physical function in the OT population [11]. Sports may play a significant role in rehabilitation after a successful organ transplant, and most clinical practice guidelines recommend exercise training as standard care for solid-organ transplant recipients [12]. While doctors have the responsibility to encourage transplant patients to perform regular physical activity, exercise must be supervised and the risks should be properly evaluated.

Objectives

The aims of the study were to examine how exercise affects psychological well-being sensations in organ recipients and to state the characteristics of the physician's role in promoting and controlling safe sport training in transplanted patients.

METHODS

A descriptive study was conducted. The authors prepared a questionnaire for the participants of the "2012 Latin American Transplant Games" that took place in Buenos Aires, Argentina, in 2012. All responders were organ recipients. Retrospective data were collected.

RESULTS

One hundred sixty-six organ recipients completed the questionnaire. Their demographic characteristics are shown in Table 1. Fifty percent of the participants heard about the transplant games from another organ recipient and only 11% from a physician; the others learned about the games either from a relative, the National Central Transplant Institute (INCUCAI), or transplant foundations. Fifty-one percent of the participants started training within the year before the games. The pre-competitive medical evaluation included (percentage of participants evaluated) physical exam (83%), electrocardiogram (57%), plasma biochemistry (81%), ergometry (34.8%), echocardiogram (37.4%), and chest radiography (43%). Over the year before the games, 53% of the participants had experienced some kind of muscle, ligament, or joint sport-related injury, and most of them (57%) presented more

than one lesion. In regard to regular physical training, mean exercise time was 7.39 ± 4.4 hours per week. Diverse types of physical activity were reported (% of cases): walking (68.1%), running (47.5%), cycling (21.2%), swimming (18.7%), weight-lifting (19%), soccer (13.3%), tennis (6.7%), and basketball (3%). Self-perception of global health was reported as excellent by 19.75% of the participants, very good by 43.95%, good by 30.67%, regular by 1.91%, and poor by 3.82%. An excellent or very good health perception was reported by 89.6% of those who performed isometric activity (weight-lifting) and only by 59.3% of those who did not perform isometric activity (Fig 1). An excellent or very good health perception was reported by 47.8% of those who practiced only one kind of sport and by 71.5% of those who trained in more than one sport (Fig 2). We found a total graft rejection incidence during the year before the games of 6.67%.

DISCUSSION

Regular physical activity is associated with health improvement and reduction in cardiovascular risk factors in the general population. Organ recipients are no exception. In fact, deleterious effects from transplantation make benefits derived from sports in transplanted patients even greater. A patient who has had an organ transplant often carries some barriers to practice sports. Muscle wasting, tendon fragility, arterial hypertension, obesity, diabetes, metabolic syndrome, and reduction of bone density are direct consequences of a prolonged chronic debilitation produced by end-stage organ disease, a sometimes tediously long post-operative period, the adverse effects of needed medications such as glucocorticoids, and physical inactivity. Psychological consequences of chronic illness such as anxiety and depression or social isolation are frequently found in transplanted people. Structured exercise training after successful transplantation has a positive impact in metabolic syndrome and cardiovascular health. Data suggest that exercise training after transplantation improves exercise capacity, assessed by 6-minute walk distance, quadriceps force, total walking time, and self-assessed level of physical function, measured out to 1 year after transplantation [13]. Regular physical activity should be part of a long-term commitment that may lead to sustained improvements in both physical and mental rehabilitation.

Medical requirements allowing transplant recipients to exercise safely must be correctly assessed by a responsible physician. Strikingly, approximately 70% of the participants had not received a complete medical pre-competitive evaluation before starting their training for the competition. Although every one of the organ recipients claimed to practice regular exercise training, only 39% did so in a supervised manner. Participant injury incidence was found to be high. The increased susceptibility of the transplant population and the lack of medical involvement in the pre-competitive and training phase may provide an explanation for the injury rate found in our study.

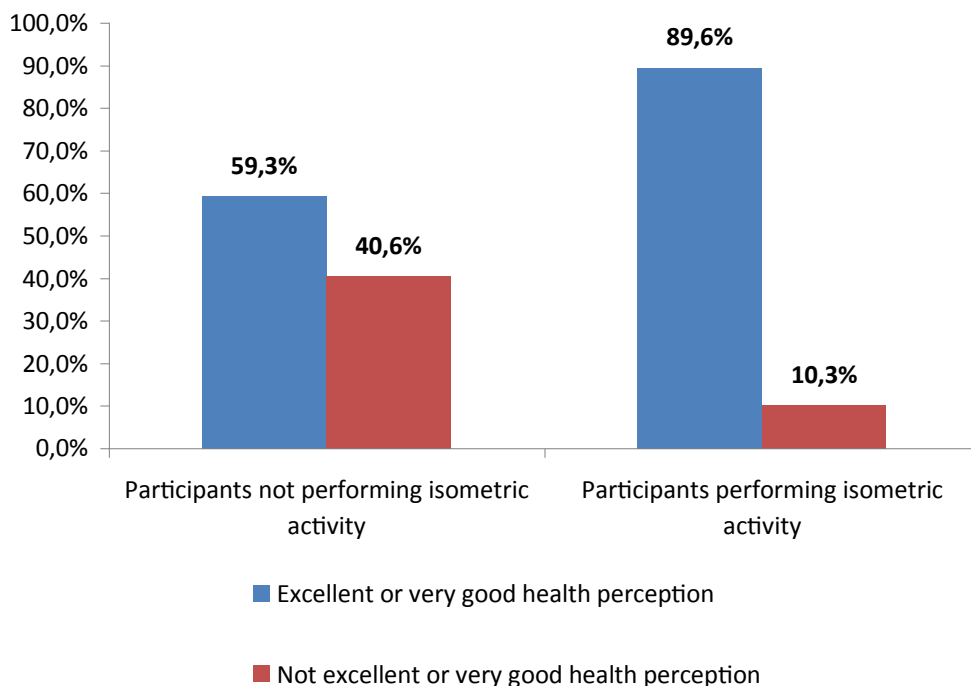


Fig 1. Relationship between health self-perception and isometric activity. An excellent or very good health perception was reported by 89.6% of those who performed isometric activity (weight-lifting) and only by 59.3% of those who did not perform isometric activity.

Transplant Games are known to measurably increase organ donation and transplantation in host countries. They also appear to be a stimulating event for organ recipients to initiate regular training. Considering all of the above, it seems surprising that only 11% of the participants heard about the Transplant Games from their doctor. Perhaps it is

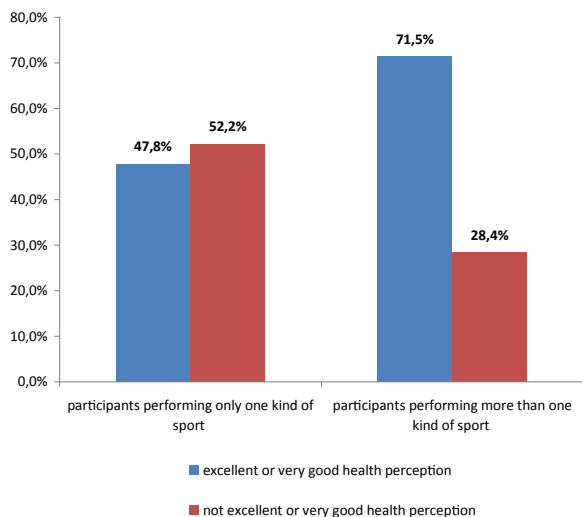


Fig 2. Relationship between physical activity and self-reported health perception. An excellent or very good health perception was reported by 47.2% of those who practiced only one kind of sport and by 71.5% of those who trained in more than one sport.

lack of update knowledge about the positive impact of intensive sports on transplant recipients that may inhibit doctors from encouraging these patients to commence sport training and participate in the Transplant Games.

In the present study, 95% of the participants reported their global health condition as being good, very good, or excellent. Others have previously shown that exercise training after organ transplantation improves the recipients self-reported health and fitness condition [9,10]. Regular physical activity is known to be associated with improvement in graft function and global health after transplantation [10,11]. In our study, a “dose-dependent” effect was found: the more diverse and intense (isometric) the activity, the better was the self-reported health condition.

Organ rejection is a major problem in OT survivors. The total rejection incidence reported during the year before the games was strikingly low. A possible relationship between low rejection indexes and sport practice might exist.

CONCLUSIONS

Physical activity and sport training is known to be associated with better self-reported health. We found that the more diverse and intense (isometric) the activity, the better was the self-reported health condition.

Most organ recipients participating in the games had not received a proper medical pre-competitive evaluation, they trained in an unsupervised manner, and injuries were common. Physician involvement in promoting and supervising exercise after a transplant must improve. The medical

community should make a greater contribution to the public awareness of Transplant Games.

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