ADHERENCE TO SIX MONTHS OF INSTRUCTED MINIMALIST AND BAREFOOT RUNNING TRAINING

RESUMEN

Introducción: El interés en la carrera minimalista y descalza crece continuamente. Sin embargo, no hay datos sobre la evasión de practicantes durante el proceso. Objetivo: Describir la adhesión y evasión de un programa de seis meses de entrenamiento instruido de carrera minimalista y descalza. Métodos: Tresintaycuatro corredores recreacionales participaron en el estudio: 20 corredores comenzaron el entrenamiento descalzo, mientras 14 corredores iniciaron el entrenamiento con calzado minimalista. La adhesión a los programas de intervención fue verificada por intermedio de planillas de entrenamiento y registro de asistencia en las sesiones de entrenamiento, mientras que la evasión fue evaluada al término del entrenamiento. Un cuestionario fue enviado a los participantes que abandonaron el entrenamiento, para obtener información relacionada con el motivo por el que dejaron el programa. Resultados: Considerando a todos los participantes (n=34), el 41.2% de los corredores completó los seis meses de entrenamiento con protección plantar reducida; el 70% de las evasiones ocurrieron en el tercer mes de entrenamiento. Conclusiones: Los motivos más comunes para abandonar el entrenamiento fueron lesión/pain (40%) y ausencia de tiempo/local apropiado para el entrenamiento; el 71.4% de las evasiones ocurrieron en el primer mes de entrenamiento. El entrenamiento con calzado minimalista (n=14) presentó menor evasión (42,9%) que el entrenamiento descalzo, siendo todas debido a lesión o dolor; el 50% de las evasiones ocurrieron en el tercer mes de entrenamiento. Conclusión: El entrenamiento con calzado minimalista está asociado con menos evasiones que el entrenamiento descalzo. Los programas de intervención que duran seis meses, basados en calzado minimalista/pies descalzos parecen ser más adecuados a otros programas dirigidos de ejercicio. Los principales motivos para abandonar son lesión o dolor y falta de tiempo/local adecuado para correr.

Descritos: carrera; pacientes desistentes del tratamiento; estilo de vida; ejercicio.
se verificó a través de hojas de cálculo y control de la presencia en las sesiones de entrenamiento, mientras la evasión se evaluó al final del entrenamiento. Se envió un cuestionario a los participantes que abandonaron el entrenamiento para la obtención de información relacionada con el abandono de las intervenciones. Resultados: De todos los participantes (n = 34), el 41,2% de los corredores que completaron seis meses de entrenamiento con protección plantar reducida; 70% de evasión se produjo en el entrenamiento descalzo; las principales razones para abandonar el entrenamiento fueron: lesión/dolor (40%) y la falta de tiempo/lugar adecuado para el entrenamiento (40%); la mayoría de abandonos (50%) ocurrieron en el primer mes de entrenamiento. El entrenamiento descalzo (n = 20) mostró 70% de evasión, con 57,1% debido a la falta de tiempo/lugar adecuado para entrenamiento; 71,4% de la evasión se produjo en el primer mes de la intervención. La carrera con el calzado minimalista (n = 14) mostró evasión más baja (42,9%) que el entrenamiento descalzo, todos los casos debiéndose a lesión o dolor; 50% de ellas se produjo en el tercer mes de la intervención. Conclusión: El abandono por lo general ocurre al comienzo del entrenamiento. La carrera descalza presenta más evasión que la carrera con calzado minimalista. Los programas de intervención con duración de seis meses y en base a carrera minimalista/descalza parecen que tienen evasión similar a otros programas de ejercicios supervisados. Las principales razones para el abandono son las lesiones y el dolor y la falta de tiempo y/o lugar adecuado para la carrera.

Descriptores: carrera; pacientes desistentes del tratamiento; estilo de vida; ejercicio.

INTRODUCTION

Running is one of the most important recreational and sport activities. Despite footwear industry efforts to develop modern running shoes and protective elements to exercise, the incidence of running injuries is still high: about 30-80% . Running barefoot and/or in minimalist shoes have been suggested recently as an interesting training approach to prevent running related injuries. Running barefoot or in minimalist shoes that mimic this situation are considered as conditions in which external protection is minimal, presenting similar mechanical behavior and being classified as minimal running. Evidences show the adoption of minimal running could be positive to reduce the mechanical load imposed to human body, what could prevent runners from some running-related injuries. As result, many runners have been interested and encouraged to adopt this way of running.

According to recent surveys, most runners (about 80%) are interested about running barefoot or in minimalist shoes. Indeed, the primary motivating factor for being interested or to adopt barefoot running/minimalist shoes has been to prevent injuries. In contradiction, the most prevalent barrier in transitioning to minimal running is fear of developing injuries. This evidence is reflected in practice: only about 22% of runners had previously tried barefoot running, while about 31% had tried running in minimalist shoes.

The interest about adaptation to barefoot condition and minimalist shoe grows continuously. However, there is no data about how many runners drop out in this process. These data, which exists for other movements and training strategies, do not exist for minimal running. Minimalist and barefoot running training programs are uncommon and long-term researches concerning minimal running are rare. Indeed, the lack of drop-out data makes difficult to elaborate instructed intervention programs based on minimal running, as well as to plan supervised training sessions using this strategy. Unfortunately, most runners who implemented minimal running in their training did the transition without professional instructions. To the best of our knowledge, few researches have investigated minimal running training. One example is McCarthy et al., who proposed 12 weeks of running training in conventional and minimalist shoes. Authors observed similar drop-out for control group (running conventional shoes) and experimental group (running in minimalist shoes), about of 36.7%, and the main reason for dropping out was injury. However, training period was short (three months) and barefoot running was not tested as training strategy. Therefore, the adhesion to instructed barefoot and minimalist running training and the reasons for dropping out from a minimal training remain unclear.

Thus, the purpose of this study was to describe the adhesion to and the dropouts from six-month instructed interventions based on running training in minimalist shoe and barefoot condition. Another purpose of the study was to examine the reasons for dropping out from minimal running instructed training.

MATERIALS AND METHODS

A six-month instructed intervention based on minimal running was proposed and followed. In total, 34 recreational runners (25 men and nine women, 30.8 ± 6.8 years, 72.6 ± 11.0 kg, 1.73 ± 0.08 m) participated in training. The intervention was divided into two training programs executed at the same time. One program was implemented through six-month barefoot running training, while the other program was done by the use of minimalist shoe in the six-month running training.

Twenty recreational runners (13 men and seven women, 33.2 ± 6.4 years, 72.6 ± 14.2 kg, 1.72 ± 0.11 m) initiated the barefoot instructed training. Participants reported 5.6 years of experience in regular running training (0.5 - 22 years), weekly volume of 44.2 km (25 - 100 kilometers per week) and 4 training sessions per week (3 - 5 sessions per week).

Minimalist shoe instructed training began with 14 recreational runners (12 men and two women, 28.4 ± 7.3 years, 72.7 ± 7.8 kg, 1.74 ± 0.06 m). Participants had 7.7 years of experience in regular running training (1 - 25 years), 88.3 km of weekly volume (60 - 120 kilometers per week) and four training sessions per week (three - five sessions per week).

Participants did not have suffered any structural injury in the last 12 months and did not have any previous experience in barefoot running or minimalist shoes. All participants were informed about the study and signed a consent form. The study protocol was approved by the local ethics committee (School of Physical Education and Sport, University of São Paulo, Nº 17816613.9.0000.5391).

During the six months of intervention, participants ran progressively at the barefoot condition. In the first month, participants were instructed to walk 5% of their weekly training volume in soft surfaces. From second till sixth month, participants started to progressively run barefoot: they evolved gradually from 5% to 30% of their weekly training volume being performed without shoes during this period. Also, participants were requested to mix soft and harder surfaces in their training. Barefoot running training should be performed three times per week. The participants kept their normal running training routine,
using conventional running shoes in the remaining weekly volume, while they were involved in this research.

Three fitted pairs of shoes from New Balance® were given to each participant to mediate the intervention: a conventional running shoe, a “medium” minimalist shoe and a “low” minimalist shoe.

Conventional running shoe used was the NB 759 and it presents absolute heel height of 45 mm, has 18 mm of heel-forefoot offset and weighs 280g. The NB 890 was the “medium” minimalist shoe adopted and it presents intermediate values of absolute heel height (40 mm), heel-forefoot offset (12 mm) and weight (250g) when compared to conventional shoe and low profile minimalist shoes. The “low” minimalist shoe was the NB Minimus MR10BG, whose absolute heel height is 25 mm, heel-forefoot offset is four millimeters and it weighs 209g.

All participants were instructed to perform three training sessions per week using a determined given pair of shoes, while they maintained their habitual weekly running distance and routine of training sessions. During the first and second months, participants were instructed to use the conventional shoes given. The “medium” minimalist shoe should be worn in the third and fourth months of intervention. Lastly, the “low” minimalist shoes should be adopted in the fifth and sixth months of training. All training sessions were supervised by the researchers.

Participation and adhesion to both interventions were evaluated through training spreadsheets and presence control. In the end of intervention period, the dropouts were evaluated. A questionnaire was sent by email to participants who abandoned interventions in order to access the reasons for dropping out the training. Descriptive statistics and percentages were used to summarize the adhesion to interventions and the reasons for dropping out.

RESULTS

Considering both interventions together, of 34 participants who initiated minimal running instructed training, 41.2% (n=14) remained until the end of six months, occurring 20 dropouts in this period. Seventy percent of dropouts (n=14) occurred in the barefoot intervention, while 30% (n=6) was observed in minimalist shoe intervention. The most reported reasons for dropping out from minimal running training were injury/pain (40%, n=8) and lack of time/appropriate place for training sessions (40%, n=8) (Figure 1). Fear of developing injury were also reported as a factor for interrupting training (Figure 1). Fifty percent (n=10) of dropouts from minimal training (barefoot and minimalist shoe interventions together) occurred in the first month of training; five participants quitted minimal training between the second and third months, as well as occurred between fourth and fifth months (Figure 2).

Analyzing each intervention solely, 30% of participants (6 of 20) finished the training period in barefoot intervention, occurring 14 dropouts. Lack of time/place for training sessions (57.1%, n=8) and fear of developing injury (21.4%, n=3) were reported as the main reasons to abandon barefoot training. Two participants quitted barefoot intervention due to injury/pain (14.3%) and one participant suffered an accident. For barefoot training, 71.4% (n=10) of dropouts occurred in the first month of intervention.

In minimalist shoe intervention, about 57.1% (8 of 14 participants) persisted until the end of six months of training, occurring 6 dropouts. All participants who quitted minimalist training (100%, n=6) reported injury/pain. Three of them (50%) dropped out in the third month; one participant quitted the intervention in the fourth month and two runners abandoned training in the fifth month.

DISCUSSION

This is the first study to propose a long instructed intervention based on minimal running (barefoot and minimalist shoes), with standardized and supervised training. Moreover, our study is the first to evaluate adhesion to and dropouts from a minimal running intervention, as well as to describe the time and reasons of dropping out from a barefoot/minimalist running training.

Data indicates about half of participants who initiate a six-month instructed intervention mediated by minimal running (barefoot and minimalist shoes) adhere to training till the end of period. Considering evidences that many runners have fear to develop injuries during minimal running12,13, a considerable number of dropouts would be expected. Surprisingly, results indicate the dropouts in the present study are according to the percentage found for others supervised exercise programs. The typical dropout rate from different types of supervised exercise programs reported by literature is around 50%15-20. Considering barefoot and minimalist shoe interventions together, our study observed 58.8% of dropouts from an instructed minimal running training.

Minimalist shoe training also presented a dropout similar to that reported for other exercise programs (42.9%). On the other hand, a higher number of dropouts was observed for barefoot training: 70% of runners dropped out abandoned barefoot running. This result may reflect a higher discomfort in the adoption of barefoot running and greater concern about protection of plantar surface. Although minimalist shoe serves to mimic the mechanical condition imposed by barefoot condition, the small protection offered by this shoe to plantar surface may diminish sore and discomfort in this region. This fact could favor the maintenance of participants in the training program.

Nevertheless, fear of developing injury or discomfort were not the most reported motivating factor for dropping out from the instructed minimal running intervention. In opposition to literature12,13, the main reason found to leave minimal running training was the occurrence of injury and/or pain, and the lack of time and/or an appropriate place to run barefoot or in minimalist shoes. The concern about an appropriate place to perform minimal training may carry an implicit insecurity and/or discomfort in maintaining these training strategies, also. Forty percent of runners who abandoned minimal running training suffered...
Contribution of running and injury risks: a narrative review

Introduction

Running has become a popular form of physical activity, with millions of people engaging in it worldwide. However, running also carries a risk of injury, and understanding the factors that contribute to this risk is crucial for athletes and fitness enthusiasts. In this article, we provide a comprehensive review of the epidemiology of running injuries, the biomechanics of running, and the role of training and footwear in injury prevention.

Epidemiology of Running Injuries

Running injuries can be acute or chronic, and they can affect any part of the body. The most common running injuries include shin splints, patellar tendinopathy, iliotibial band syndrome, and stress fractures. According to a study by Fredricson and Misra (2007), the incidence of running injuries among marathon runners is 43.7%, with shin splints being the most common injury (37%).

Biomechanics of Running

The biomechanics of running play a crucial role in injury risk. The impact of running is high, and even barefoot running can result in high collision forces. For example, a study by Wilbur et al. (1993) found that the impact of footstrike is higher when running barefoot compared to shod.

Training and Footwear

Training intensity and duration are also important factors in injury risk. A study by Green et al. (2005) found that runners who increased their weekly mileage by more than 10% were 5.2 times more likely to experience an injury.

Footwear can also affect injury risk. A study by Madison et al. (2006) found that minimalist footwear was associated with a lower risk of injury compared to traditional running shoes.

Conclusion

In summary, running injuries are a significant concern for runners, and understanding the factors that contribute to these injuries is essential for injury prevention. Future research should focus on the development of interventions to reduce injury risk, particularly in high-risk populations such as younger and older runners.

References


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