19 - IMPORTANCE OF VISUAL INFORMATION AND SURFACE SUPPORTON POSTURAL BALANCE CARRIER BY LEPROSY

AMANDA Z. MENDES
CARLOS EDUARDO DE ALBUQUERQUE
DANIELE CONCICOVSKI
CELEIDE P. A. PERES
Universidade Estadual do Oeste do Paraná – Cascavel – Paraná – Brasil
amanda.mendes90@gmail.com

INTRODUCTION

Leprosy, according to Alves et al (2010), is an infectious disease that brings thedermatological-neurological consequences. Leprosy, According to Ahmed et al (2010), is an infectious disease, neurological thedermatological That Brings Consequences. Its causative agent is Mycobacterium leprae, which is an obligate intracellular bacilli with host preferences of nerve cells, particularly Schwann sheath. Its causative agent is Mycobacterium leprae, Which is an obbligato intracellular bacilli with host preferences of nerve cells, Schwann Particularly sheath. May cause the absence or reduction of thermal sensitivities, tactile and painful, especially the hands and feet (Goncalves, Sampaio, Antunes, 2008). May cause The Absence or Reduction of Sensitivities thermal, tactile and painful, es the hands and feet (Goncalves, Sampaio, Antunes, 2008).

Changes may occur in motor function of superficial inflammation of the nerve trunks and nerves are often attacked: the ulnar, the external popliteal sciatic or common peroneal, posterior tibial, facial, great auricular and radial (Lima, Miranda, Ferreira, 2009). Changes May Occur in motor function of superficial inflammation of the nerves and nerve trunks are attacked Often, the ulnar, the external popliteal sciatic or common peroneal, posterior tibial, facial, great auricular and radial (Lima, Miranda, Ferreira, 2009).

According to Dias and Pedrazzani (2008), Brazil is the second country with the highest rates of leprosy in the world. According to Dias and Pedrazzani (2008), Brazil is the second country with the Highest rates of leprosy in the world. And in 2007 was considered one of the countries that failed to achieve the goal of less than one case per 10,000 inhabitants, thus showing the importance of this disease as a public health problem (FERREIRA, EVANGELISTA, ALVAREZ, 2007). Considered in 2007 and was one of the Countries That Failed to Achieve the goal of less than one case per 10.000 inhabitants, Thus showing the Importance of this disease as a public health problem (FERREIRA, EVANGELISTA, ALVAREZ, 2007).

In leprosy, depending on the size of the lesion, there is the involvement of autonomic fibers, sensory and motor, but these three together can be affected when the lesion reaches the trunk of the peripheral nerves, causing the loss of all forms of sensibility, whether they be pain, cold, heat, touch, paresthesia. In leprosy, depending on the size of the lesion, there is the Involvement of autonomic fibers, sensory and motor, but These three together Can Be When the lesion affected Reach the trunk of the peripheral nerves, Causing the loss of all forms of sensibility, Whether They be pain, cold, heat, touch, paresthesia. In addition, there is paresis, paralysis and muscle atrophy (Garbin et al, 2003).

Because of this decrease or loss of sensitivity, particularly to plant, there may be limitations on the balance control, since this is the integration of sensory information and proprioception (Alfieri, 2008). Because of this Decrease or loss of sensitivity, to plant Particularly, May there be limitations on the balance control, since this is the integration of sensory information and proprioception (Alfieri, 2008). As Britain, Pinheiro and Current (2010), no correlation between change in plantar sensitivity and balance disorders as well as the distribution of plantar pressure in patients with complaints of decreased sensitivity in patients with neurological or systemic diseases. The Britain, Current and Pinheiro (2010), Between the correlation change in plant sensitivity and balance disorders as well as the distribution of plantar pressure in Patients with complaints of sensitivity Decreased in Patients with neurological or systemic diseases.

The somatosensory system, visual and vestibular information to provide the posture to adapt to any situation (Miralles and Heras, 2005). The somatosensory system, visual and vestibular information to Provide to the posture adapts to any situation (Miralles and Heras, 2005). The foot enables the system to postural adjustment and the adjustment of the information segment of the leg with respect to himself, and is therefore considered as a factor proprioceptive (Villenueve, 1990).

Stabilometry when performed on a force platform, is an objective method, innocuous and can be reproduced easily used in individuals of both sexes, regardless of height or weight (Nordahl et al, 2000). Stabilometry When Performed on a force platform, is an objective method, innocuous and Can Be Easily reproduced used in Individuals of Both Sexes, regardless of height or weight (Nordahl et al, 2000). The goal is to get stabilometry different values related systems and postural stability, as parameters that characterize the behavior standing. The goal is to get different values stabilometry Postural Stability and related systems, the parameters characterize the behavior That standing. This method is most commonly used and the force platform can provide data on possible risk factors or predisposing to certain diseases, such as disorders of gait and musculoskeletal system (Mueller et al., 1995).

For this condition affect the peripheral nerves, the carrier will have impairments and disabilities that reduce their functional independence (Goncalves, Sampaio, Antunes, 2008). For this condition Affect the peripheral nerves, the carrier will have impairments and Disabilities That Reduce Their functional independence (Goncalves, Sampaio, Antunes, 2008).

The objective of this study was to analyze the influence of the support surface and visual information on postural balance in patients with leprosy, stabilometry by analyzing the area of oscillation of the center of pressure. The objective of this study was to analyze the Influence of the support surface and visual information on postural sway in Patients with leprosy, stabilometry by Analyzing the area of oscillation of the center of pressure.

METHODOLOGY

This study was classified as a clinical trial, cross-sectional quantitative and approved by the Ethics Committee in Research of the State University of West Paraná (unions) with the opinion 325/2011, case number 1207/2011. This study was classified as a clinical trial, cross-sectional quantitative and approved by the Ethics Committee in Research of the State University of West Paraná (unions) with the opinion 325/2011, case number 1207/2011.

Sample

The sample consisted of 30 volunteers, aged between 25 and 60 years, and are subdivided into two groups: Control Group (CG) consisted of healthy, Group and Hansen (GH) composed of individuals with leprosy. The sample consisted of 30

Volunteers, aged Between 25 and 60 years, and are subdivided into two groups: Control Group (CG) consisted of healthy, Group and Hansen (GH) composed of Individuals with leprosy.

Criteria for inclusion

Inclusion criteria for GH were individuals with sequelae of leprosy in drug treatment directed by the SUS (Unified Health System) to the Rehabilitation Center Unioeste, Cascavel, in the age group 25 to 60 years. Inclusion criteria for GH Were Individuals with sequelae of leprosy in Drug Treatment directed by the SUS (Unified Health System) to the Rehabilitation Center Unioeste, Cascavel, in the age group 25 to 60 years.

For the GC, were individuals with no history of leprosy, who were willing to participate in the survey, the same age range quoted above. For the GC, Were Individuals with the history of leprosy, Who Were Willing to Participate in the survey, The Same age range quoted above.

Criteria for non inclusion

The inclusion criteria for GH and GC were individuals with skin lesions on the plantar region, amputations, neurological sequelae of central osteomioarticular dysfunction of the lower limbs. The inclusion criteria for GH and GC Were Individuals with skin lesions on the plantar region, amputations, neurological sequelae of central osteomioarticular dysfunction of the lower limbs. For GH, included the criterion of not being in treatment. For GH, included the Criterion of not being in treatment.

Materials

The data obtained from a force platform (AMTI, model OR6-6, USA) with a sampling frequency of 200Hz. The date Estabilografiaforam Obtained from a force platform (AMTI, model OR6-6, USA) with a sampling frequency of 200Hz. The indices evaluated were analyzed using the Matlab area in the center of pressure. The indices Were Evaluated Analyzed using the Matlab area in the center of pressure. It will also be used for the balance test, a soft mattress 3 cm thick. Also it will be used for the balance test, the 3 cm thick soft mattress.

The Clinical Test of Sensory Interaction on Balance (ICTs) has been modified to contain only four conditions. The Clinical Test of Sensory Interaction on Balance (ICTs) has been modified to contain only four conditions. The TCIS changed is the combination of two sensory visual conditions (normal vision and lack of vision) and two support surface conditions (normal orientation and inaccurate). The TCIS changed is the combination of two sensory visual conditions (normal vision and Lack of vision) and two support surface conditions (normal orientation and inaccurate). Therefore, the modified TCIS consists of four sensory conditions: (1) subject standing with eyes open on a firm surface, (2) individual standing with eyes closed on a firm surface, (3) individual standing with eyes open in a smooth surface, (4) individual standing with closed eyes in a soft surface (Wrisley and Whitney, 2004; Wrisley and Whitney, 2004).

Procedures

After evaluation of inclusion and the patient be aware of the study, signed the term of consent. Thus, individuals were referred to trial in sensory integration force platform under the conditions cited in ICTs, with the arms along the body, where they observed the fixed point 1.75 m away at eye level of each individual, for 60 seconds at 2 attempts for each condition. Thus, Individuals Were Referred to trial in sensory integration force platform under the conditions cited in ICTs, with the arms along the body, where the Observed They fixed point 1.75 m away at eye level of each individual for 60 seconds at 2 attempts for each condition. The surface was performed with a soft foam mattress 3 cm thick.

Data analysis Analysis of data

The data were processed and the value area of oscillation of 95% of the points defined by an ellipse was analyzed for both groups tested. Were the data processed and the value area of oscillation of 95% of the points defined by an ellipse was Analyzed for Both groups tested. The influence of vision was determined by the ratio: area of the ellipse in the eyes open condition / area of the ellipse in the eyes closed condition. The Influence of vision was determined by the ratio: area of the ellipse in the eyes open condition / area of the ellipse in the eyes closed condition. The influence of the support surface was determined by the ratio: area of the ellipse on the surface stable (no foam) / area of the ellipse on the unstable surface (foam). The Influence of the support surface was determined by the ratio: area of the ellipse on the surface stable (in foam) / area of the ellipse on the unstable surface (foam). The results were considered normal by the Kolmogorov-Smirnov test. The results were considered normal by the Kolmogorov-Smirnov test. For the difference between the means was used T test with a significance level of 5%.

Results

The results show the stabilometry reduction ($p < 0.05$) in view of the influence of an unstable condition for the groups studied, but shows no differences between the groups studied (Figure 1). The results show the stabilometry Reduction ($p < 0.05$) in view of the Influence of an unstable condition for the groups studied, but shows the Difference Between the groups studied (Figure 1). By analyzing the changes of oscillation of center of pressure area, associated with different support surfaces, shows the condition eyes open ($p < 0.05$) influence of the surface to the leprosy group (Gráfico2). By Analyzing the changes of oscillation of center of pressure area, Associated with different support surfaces, shows the eyes open condition ($p < 0.05$) Influence of the surface to the leprosy group (Gráfico2). Values close to 1% show minor differences in the area of body sway. Values close to 1% show minor Differences in the area of body sway.

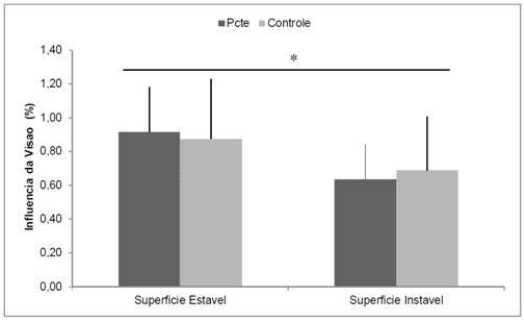

Chart 1 - Comparison of the influence of open and closed eyes conditions in the area of oscillation of the center of pressure for stable and unstable surfaces for the groups evaluated (PTEC - Hansen Group; Control - Control Group * - p <0.05 between the support surfaces).

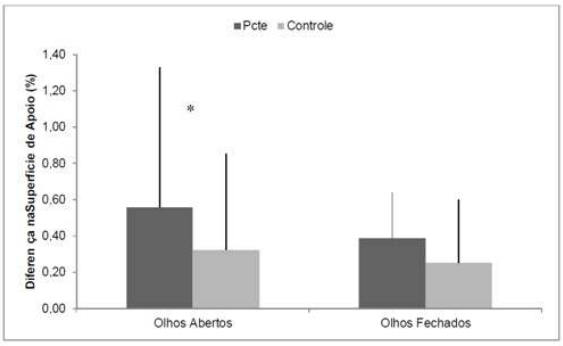

Chart 2 - Comparison of the difference in swing area of the bearing surfaces under conditions of eyes open and closed groups evaluated (PTEC - Hansen Group; Control - Control Group * - p <0.05 between groups evaluated).

Discussion

The results of this study show that the conditions eyes open and eyes closed with the area of body sway of the groups analyzed in the same proportion in the analysis of surfaces. The results of this study show That the conditions eyes open and eyes closed with the area of body sway of the groups in the Same Proportion Analyzed in the analysis of surfaces. And in the unstable condition of the differences show the influence of vision with increased area of body sway. And in the unstable condition of the Difference show the Influence of Vision with Increased area of body sway. The variation of the support surface presented to the group of subjects with sequelae of leprosy during the test with eyes open, no difference. The variation of the support surface Presented to the group of subjects with sequelae of leprosy During the test with eyes open in the difference. This finding may be caused by involvement in peripheral nerve fibers that affect sensory, motor and autonomic altered postural control. This finding May Be Caused by Involvement in peripheral nerve fibers That Affect sensory, motor and autonomic altered postural control. Provided less difficult for postural control, eyes open on firm surface, there was no difference for changes in the area of oscillation between the groups. Provided postural control is less Difficult, eyes open on firm surface, there was the difference for changes in the area of oscillation Between the groups. This probably occurred because the subjects as leprosy show changes in the peripheral nerves, using the visual information available to maintain the posture. Probably this occurred because the leprosy subjects show the changes in the peripheral nerves, using the visual information available to Maintain the posture.

In the eyes open condition, subjects with leprosy and healthy subjects showed area ratio of oscillation different when evaluating the different support surfaces, probably because the information changes, from the somatosensory system was not fully compensated by the visual information and information about proprioception of the ankle was affected by the soft surface, even with the visual information present. In the eyes open condition, subjects with leprosy and healthy subjects Showed area ratio of different oscillation When Evaluating the different support surfaces, Probably because the information changes, from the somatosensory system was not fully compensated by the visual information and information about proprioception of the ankle was affected by the soft surface, even with the present visual information.

In the eyes closed condition, the variation of surface equally affected groups tested, healthy individuals use visual information to maintain their stability as sequelae of individuals with leprosy do not use, as seen in the test with eyes open, so the variations area found in healthy subjects compared to patients, provided with eyes closed, can characterize an adaptation developed by patients to maintain stability. In the eyes closed condition, the variation of surface Equally affected groups tested, healthy Individuals use visual information to Maintain Their Stability of the sequelae of the Individuals with leprosy not use, as seen in the test with eyes open, so the area Variations found in healthy Patients Compared to subjects, provided with eyes closed, can characterize an adaptation developed by Patients to Maintain stability.

The area values of oscillation of leprosy patients are similar to results found in studies of neuropathy. The area values of oscillation of Leprosy Patients are similar to results found in studies of neuropathy. Older patients with distal neuropathy showed less postural stability, measured by the displacement of the center of pressure, which healthy elderly subjects, the conditions eyes open and eyes closed (Corriveau et al., 2000). Older Patients with distal neuropathy Showed less postural stability stable, measured by the displacement of the center of pressure, Which healthy elderly subjects, the conditions eyes open and eyes closed (Corriveau et al., 2000).

A study on diabetic patients with sensory neuropathy identified an increase in 45 values of the displacement of center of pressure in the anteroposterior and mediolateral. A study on diabetic sensory neuropathy Patients with an Increase in 45 Identified values of the displacement of center of pressure in the anteroposterior and mediolateral. Subjects with somatosensory loss of information due to diabetic neuropathy have a magnitude of oscillation greater than the healthy control subjects (Lafond et al., 2004). Subjects with somatosensory loss of information due to diabetic neuropathy have the magnitude of oscillation Greater than the healthy control subjects (Lafond et al., 2004).

Diabetic neuropathy disturbed especially the balance in the dominant leg and in patients with diabetic polyneuropathy sensory changes were associated with tests of nerve function tested and significant loss in the perception of motion of the ankle (Simoneau et al., 1996). Especially the diabetic neuropathy disturbed balance in the dominant leg and in Patients with diabetic polyneuropathy sensory changes Were Associated with tests of nerve function and tested Significant loss in the perception of motion of the ankle (Simoneau et al., 1996).

You can not assign all the observed differences between the two groups, control and Hansen, only to Hansen's disease, other factors may be associated with differences. You Can not assign all the Observed Difference Between the two groups, control and Hansen, only to Hansen's disease, other factors May Be Associated with differences. New research may help in resolving these questions. New Research May Help in Resolving These questions.

Conclusion

The sequelae of Individuals with leprosy present Variations of the Same area of body sway in healthy subjects, When

They Analyzed the conditions of open and closed eyes. In the different support surfaces, stable and unstable patients show no difference in the ability to maintain body stability in the eyes open condition. In the different support surfaces, stable and unstable Patients show the difference in the body Ability to Maintain Stability in the eyes open condition.

BIBLIOGRAPHIC REFERENCES

ALFIERI, F.M. Distribuição da pressão plantar em idosos após intervenção proprioceptiva. **Revista Brasileira de Cineantropometria e Desenpenho Humano**, 10(2): 137-142, 2008.

ALVES, C.J.M. et al. Avaliação do grau de incapacidade dos pacientes com diagnóstico de hanseníase em serviço de dermatologia do estado de São Paulo. **Revista da Sociedade Brasileira de Medicina Tropical,** 43(4): 460-461, 2010.

BRETAN, O.; PINHEIRO, R. M.; CORRENTE, J. E. Avaliação funcional do equilíbrioe da sensibilidade cutânea plantar de idosos moradores da comunidade. **Brazilian Journal of Otorhinolaryngol**, v. 76, n. 2, p. 219-224, 2010.

Corriveau, H., Prince, F., Hebert, R., Raiche, M., Tessier, D., Maheus, P., Ardilouze, J. Evaluation of postural instability in elderly with diabetic neuropathy. **Diabetes Care**, v 23, n. 8, p. 1187-1191, August, 2000.

DIAS, R.C. PEDRAZZANI, E.S. Políticas públicas na hanseníase: contribuição na redução da exclusão social. **Revista Brasileira de Enfermagem**,61(esp): 753-756, Brasília, 2008.

FERREIRA, I.N. EVANGELISTA, M. S.N. ALVAREZ, R.R.A. Distribuição espacial da hanseníase na população escolar em Paracatu- Minas Gerais, realizada por meio da busca ativa (2004-2006). **Revista Brasileira de Epidemiologia**, 10(4): 555-567, 2007.

GARBINO, J.A et al. Projeto Diretrizes; Hanseníase: diagnóstico e tratamento da neuropatia. Associação médica e conselho federal de medicina, 2003.

GONÇALVES, S.D. SAMPAIO, R.F. ANTUNES, C.M.F. Ocorrência de neurite em pacientes com hanseníase: análise da sobrevida e fatores preditivos. **Revista da Sociedade Brasileira de Medicina Tropical,** 41(5): 464-469, 2008.

LAFOND, D.; CORRIVEAU, H.; PRINCE, F. Postural control mechanisms during quiet standing in patients with diabetic sensory neuropathy - Pathophysiology/Complications. **Diabetes Care**, janeiro, 2004.

Lima GM, Miranda MGR, Ferreira TCR. Ação do exercício terapêutico nas neurites crônicas de membros superiores em pacientes portadores de hanseníase atendidos na unidade de referência especializada em dermatologia sanitária Dr. Marcello Candia. Hansen International, 34(1):9-16, 2009.

MIRALLES RC, HERAS C. Introduccion a la biomecânica clínica del aparato locomotor. In: Miralles R, Miralles I, editors.Biomecânica clínica de los tejidos y lar articulaciones delaparato locomotor. 2nd ed. Barcelona, Masson: 2005. p. 3-14.

MUELLER K, CORNWALL MW, MCPOIL TG, et al. Effect of two contemporary toninhibiting ankle-foot orthoses on foot-loading patterns in adult hemiplegics: a small group study. **Top Stroke Rehabil**, 1995;1:1-16.

NORDAHL SH, AASEN T, DYRKORN BM, ELDSVIK S, MOLVAER OI.Static stabilometry and repeated testing in a normal population. **Aviation Space & Environmental Medicine,** 2000; 71:889-93.

Simoneau, G. G., Derr, J. A., Ulbrecht, J. S., Becker, M. B., Cavanagh, P. R. Diabetic sensory seuropathy effect on ankle joint movement perception. **Archives Physical Medicine and Rehabilitation**, v.77, p. 453-460, May, 1996.

VILLENEUVE P. Le pied humain organe de la posture orthostatique. **Kinesither Sci** 1990;294:47-51.

IMPORTANCE OF VISUAL INFORMATION AND SURFACE SUPPORTON POSTURAL BALANCE CARRIER BY LEPROSY

SUMMARY

Introduction: Leprosy is a chronic infectious disease and neurological considered to affect the peripheral nervous system and dermatological skin and mucosa. The correlation between abnormal plantar sensitivity and balance disorder occurs by the integration of proprioception and sensory information. Objective: The aim of this study was to analyze the postural control of subjects with sequelae of leprosy through the force platform, and compared with healthy subjects. Methods The sample is composed of 30 patients were subdivided into two groups, control group (CG) and Group Hansen (GH). The data area of body sway were obtained using a force platform in the open and closed eye conditions, and stable and unstable surface. Results: The eyes open and closed conditions affect the way both groups. The different support surfaces affect the group of patients suffering from leprosy only on the condition eyes open. Conclusion: Patients with sequelae of leprosy were not sensitive to different visual conditions, but variations on the support surface show differences in the ability to maintain stability only in the eyes open condition.

KEYWORDS: Leprosy, postural balance, proprioception.

RÉSUMÉ

Introduction: La lèpre est unemaladie infectieuse chroniqueet neurologiques considéré affecter le systèmenerveux périphérique etdermatologiqueset les muqueuses.La corrélationentre la sensibilité plantaire anormale ettrouble de l'équilibrese fait parl'intégration de laproprioceptionet les informations sensorielles. Objectif: Lebut de cette étudeétait d'analyser lecontrôle posturalde sujets présentant desséquellesde la lèpreà travers laplateforme de force, et comparativement aux sujets sains. Méthodes: L'échantillonest composé de 30patients ont étésubdivisés en deux groupes, le groupe de contrôle(CG) et le groupe Hansen(GH). Lazone de données dubalancement du corpsont été obtenuesen utilisantune plateforme de forcedans les conditionsles yeux ouverts etfermés, etune surface stableet instable. Résultats: Les yeuxouverts et fermésconditionsaffectent la façon dontles deux groupes.Les surfaces d'appui différentes affecter le groupede patients souffrant dela lèprequesur les yeuxla conditionouverte. Conclusion: Les patients présentant des séquellesde la lèprene sont passensibles aux différentes conditions visuelles, mais les variations sur lasurface d'appuimontrent des différences dans la capacité àmaintenir la stabilitéque dansla condition yeux ouverts.

MOTS-CLÉS: la lèpre, l'équilibre postural, la proprioception.

RESUMEN

Introducción: La lepra esuna enfermedad infecciosa crónicay neurológicaconsidera queafectan al sistemanervioso periféricoy la pielen dermatología y enla mucosa. La correlaciónentre la sensibilidadanormal deplantarytrastornos del equilibriose producepor la integraciónde la propiocepciónyla información sensorial. Objetivo: El objetivo de esteestudio fue analizarelcontrol de la posturade los sujetos consecuelasde la lepra através de la plataforma de fuerza, yen comparación consujetos sanos. Métodos: La muestra se componede 30 pacientesfueron subdivididos en dos grupos, el grupo control (GC) y Grupo deHansen(GH). El área de datosdebalanceo del cuerpose han obtenido utilizandouna plataforma de fuerzaen lasenfermedades de los ojos abiertos y cerrados, yuna superficie establee inestable. Resultados: Los ojosabiertos y

cerradoscondicionesafectan la manera enambos grupos.Las superficies deapoyo dediferentes afectan algrupo depacientes que sufren deleprasóloen los ojosestado abierto. Conclusión: Los pacientescon secuelasde la leprano fueron sensiblesa las diferentes condicionesvisuales, pero las variaciones en la superficiede apoyomuestran diferencias enla capacidad de mantenerla estabilidad sóloen la condición delos ojos abiertos.

PALABRAS CLAVE: Lepra, el equilibrio postural, la propiocepción.

RESUMO

Introdução: A hanseníase é uma doença infecto-contagiosa crônica sendo considerada neurológica por afetar o sistema nervoso periférico e dermatológica da pele e mucosa. A correlação entre alteração da sensibilidade cutânea plantar e distúrbio do equilíbrio ocorre pela integração da propriocepção e das informações sensoriais. Objetivo: O objetivo deste estudo foi analisar o controle postural de sujeitos com sequelas de hanseníase, através da plataforma de força, e comparar com sujeitos saudáveis. Métodos: A amostra será composta por 30 pacientes sendo subdivididos em dois grupos, Grupo Controle (GC) e Grupo Hansen (GH). Os dados de área de oscilação corporal foram obtidos através de uma plataforma de força nas condições olhos abertos e fechados, e em superfície estável e instável. Resultados: As condições olhos abertos e fechados afetam da mesma forma os grupos avaliados. As diferentes superfícies de apoio afetam o grupo de pacientes com seqüelas de hanseníase apenas na condição de olhos abertos. Conclusão: Os indivíduos com seqüelas de hanseníase não foram sensíveis às diferentes condições visuais, mas as variações na superfície de apoio mostram diferenças na habilidade de manter a estabilidade apenas na condição olhos abertos.

PALAVRAS-CHAVES: Hanseníase,Equilíbrio Postural, Propriocepção.