Discussion and conclusion

The pattern of normal gait described by countless authors (1, 2, 3) had as base studies in a local population. In Brazil and South America the few laboratories that accomplish clinical gait analysis use data originating from other countries to serve as comparative method in exams of pathological gait patterns. Therefore, the great value importance of the use of an own and local database is to serve Brazilian clinical and scientific communities in future studies.

References

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Methodology and Modelling

Dimensionless approach to decrease the inter-subjects variability of walking parameters

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Introduction

The great data base variability makes it difficult the identification of locomotor parameters responsible of the senior's fall risk. The variability coefficients (CoV) of each measure results, in part, of using spontaneous speed. As a matter of fact, the natural speed depends of many intrinsic (gender, age, anthropometry, fatigability…) and extrinsic (environmental) parameters. The purpose of this study was to verify that using a dimensionless approach for similar speed (S_{sim}) determination makes it possible to reduce the inter-subject variability of locomotor pattern.

Materials and method

Fourteen male subjects (22±3 years) took part in the study. Pairings were made on the basis of subjects' leg length (L), body mass (m) and size. From these parameters, 7 pairs of similar anthropometric subjects were obtained matching 7 referent subjects to 7 doubles. Three walking trials were carried out. In the first one, the spontaneous speed (S_{spon}) of the referent subjects is identify then imposed during the walking tests. In the second, the doubles had to walk at their referents' S_{spon}. In the third, the doubles had to adopt a similar speed ($S_{sim} = Nfr.(gL)^{0.5}$) computed from a fraction of the Froude number (Nfr) and the leg length (L).

The optoelectronic system (SAGA 3) connected to two force platforms (Logabex) were used to assess the kinematical and kinetic parameters.

The centre of gravity displacement was computed from the marks coordinates and an anthropometrical model.

Results

At S_{sim}, the mean CoV of the vertical oscillation (Cgz) and the horizontal displacement Cg(y) of the centre of gravity decreased by 4% and 20%, respectively compared to tests performed at S_{spon}.The mean CoV of the vertical ground reaction force (Fz) and of the antero-posterior force (Fy) were by 35% and 20% significantly lower at S_{sim} than at S_{spon}, respectively.

Discussion and conclusion

Our study of the human locomotion shows that the determination of similar walking speed from a fraction of the Froude number and the leg length makes it possible to reduce the inter-subject variability of a group of subjects. The results let foresee direct medical and paramedical

Three-dimensional clinical gait analysis in normal brazilian adults

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Introduction

Gait serves an individual's basic need to move from place to place. As such, walking is one of the most common activities that people do on a daily basis. Ideally, walking is performed both efficiently, to minimize fatigue, and safely, to prevent falls and associated injuries.

Methodology

Twenty-nine subject, fifty-eight limbs (twenty-one women, eight men) with average age of 26.5±5.6 years, with no history of musculoskeletal or neurological impairment and self-select speed were included. Informed consent was obtained. Three dimensional gait data were collected with VICON 370 system with six cameras. Time-distance (walking velocity, step length, cadence, single and double support) and kinematic (joint rotation angles of pelvis, hip, knee and ankle in sagittal, coronal and transverse planes) data were processed using Vicon Clinical Manager software.

Results

Time–distance values were: walking velocity 118.7±12.1 cm/s; step length 62.8±5.5 cm, cadence 92.6±4.5 steps/min; single support 35.9±1.9% of gait cycle and double support 28.0±3.2% of gait cycle. Kinematic variables of the pelvis, hip, knee and ankle in sagittal, coronal and transverse planes gait with mean values (S.D.) are presented in Fig. 1.

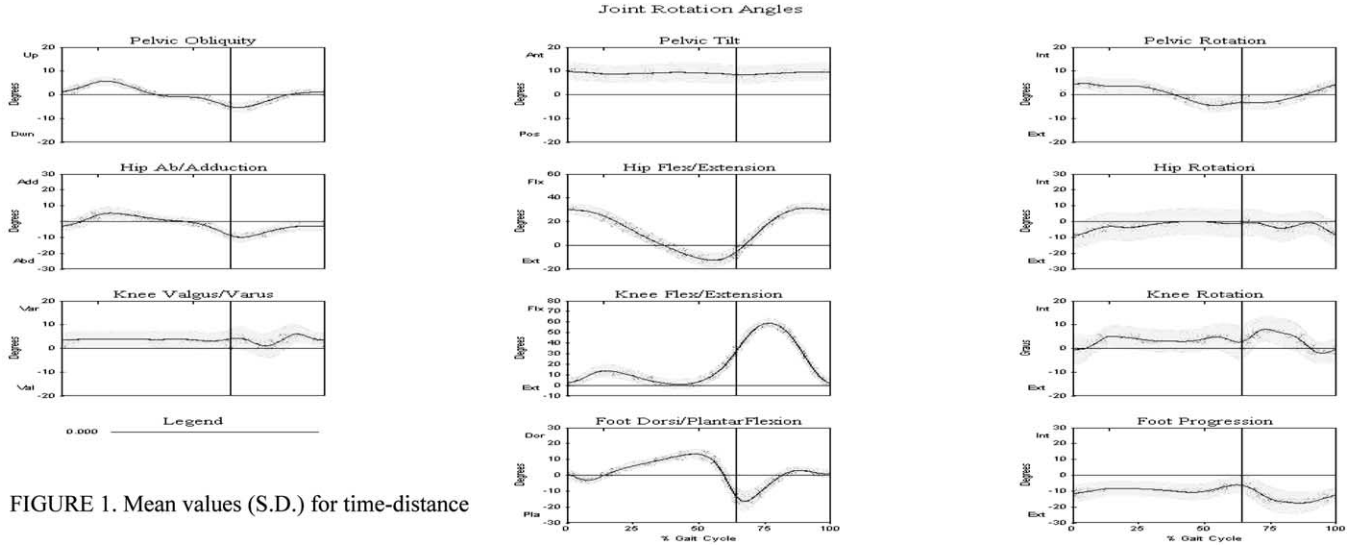

FIGURE 1. Mean values (S.D.) for time-distance

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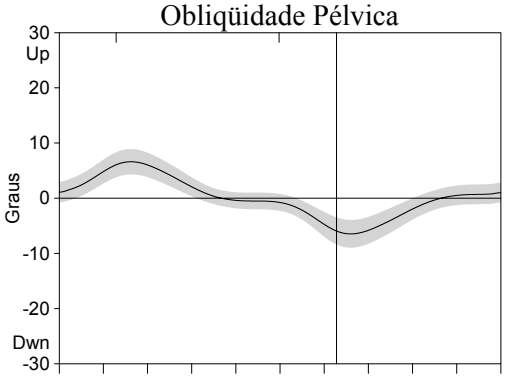
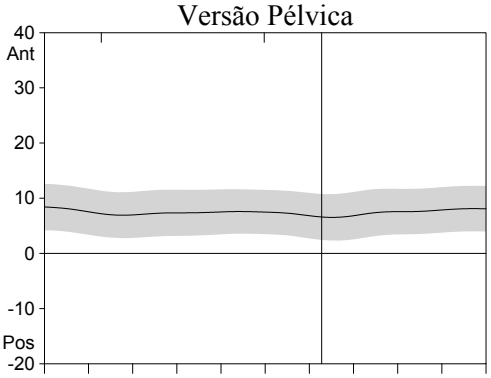
Lado Analisado: Left - Comentários: 0.000

Rotações Angulares Articulares

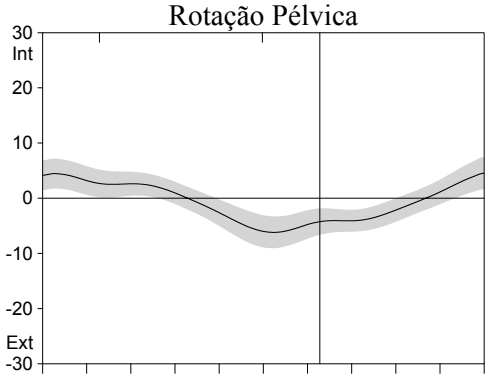
Obliqüidade Pélvica



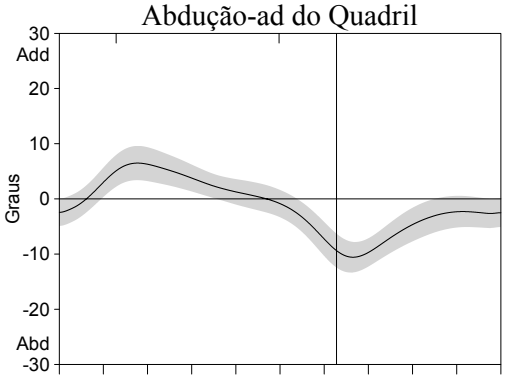
Versão Pélvica



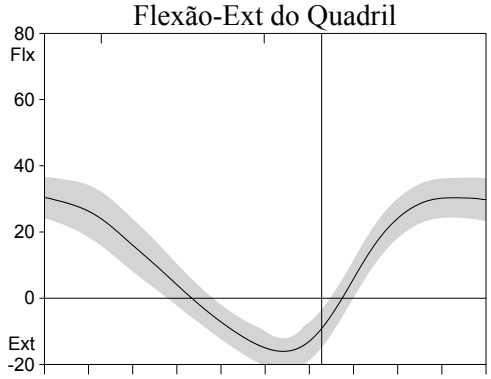
Rotação Pélvica



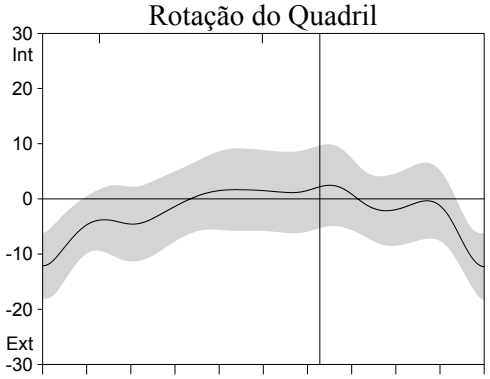
Abdução-ad do Quadril



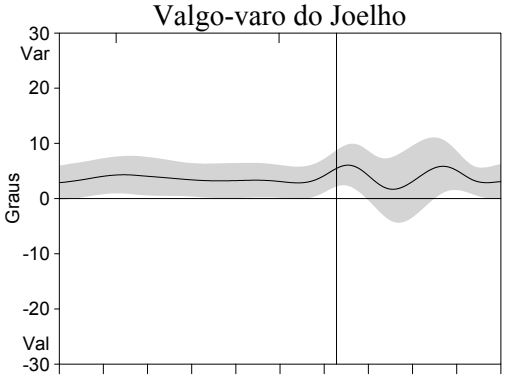
Flexão-Ext do Quadril



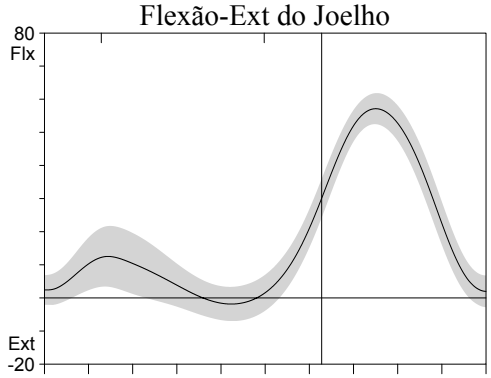
Rotação do Quadril



Valgo-varo do Joelho



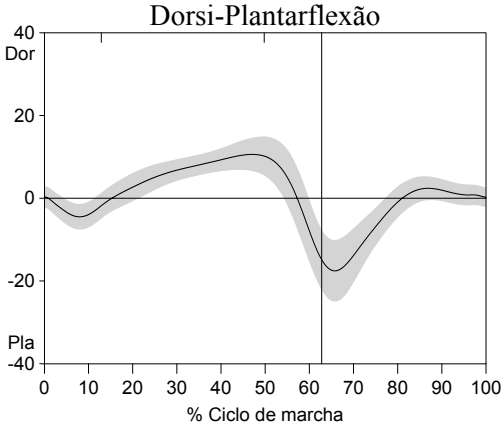
Flexão-Ext do Joelho



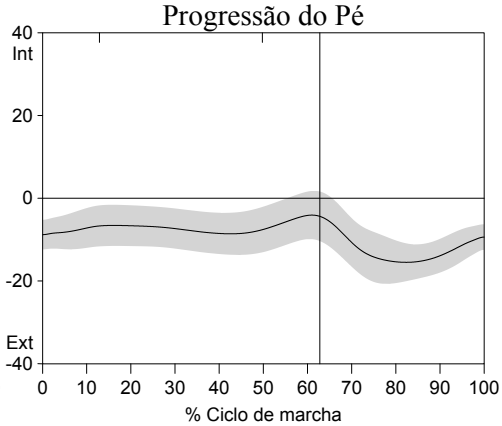
Legenda

DPF_THR:0.000

Dorsi-Plantarflexão



Progressão do Pé



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Lado Analisado: Left - Comentários: 0.000

Momentos e Potências - Planos Sagital e Coronal