

APPLICATION AND ADVANCE OF FOOT PRESSURE MEASUREMENT IN BIOMECHANICAL RESEARCH

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INTRODUCTION: This study summarized the application and advance of foot pressure measurement (FPM) in biomechanical research in recent years, and gives a view of development in clinical biomechanics, sports biomechanics and ergonomics research.

METHODS: Application and advance of biomechanical studies on FPM in gait analysis, clinical of foot diseases, and wearing shoes have been reviewed. Prospect of FPM technique development in future has been discussed.

RESULTS AND CONCLUSION: Application of foot pressure measurement in gait analysis has become the representative research direction of biomechanics. Of late years, a large numbers of paper in *Gait and Posture*, *Ergonomics*, *Clinical Biomechanics*, *Journal of Biomechanics* were refer to foot pressure measurement and analysis. Many researchers carried on the different crowd to have the representative gait analysis and clinical research.

The FPM is not only can diagnose foot diseases, but also can help people to give a medical opinion in foot operations, it's very important in diagnoses and treatment of foot diseases and artificial limb design. The research in clinical biomechanics has already found out its regulation of foot pressure distribution in some clubfoot, for example, Equinovarus, High foot arch, Flexible flat foot etc. From measured and analyzed the foot pressure by patients of hallux valgus and amputees wearing artificial limbs during walking, Stoke LAF and Axel H et al. have provided some technique support for the cure project.

Result by Grundy M., Sato H., Joanne R.E., Gastwirth B.W., deLateur B.J., Chang-Min Lee et al. in research of foot pressure distribution and measurement were indicated that the heel height is the brief causation of change in foot pressure and distribution, but it's always neglect in shoe design. The research of PFM in foot wearing was bringing the technical support in shoe industry and healthy design of the shoe. In recent years, Li, Jianshe and his graduate students Wu, Jian, Wang, Liping, Lu, Yichen study the gait characteristics of young females during walking on the ground, step and slope, the volunteers walking in barefoot, sport shoe, flat shoe, platform and high heels with different heel height, through the motion analysis, sEMG signal measurement, insole pressure measurement in research, they found some important result in research.

In clinical biomechanics *research*, through the gait analysis and FPM for especial crowd, for example, foot patients, amputees et al. It can bring the technical support in clinical diagnoses and preventions for foot diseases, and also can give us accurate assessment for function recovering, curative effect assessment of foot disease. In ergonomics research, by research of foot pressure distribution in in-sole and sole, found the relation between foot health and characteristic of sole, heelpiece, upper et al, help people to design the healthy shoes. In sports biomechanics, the FPM technique will bring a new space in sports biomechanics research and new methods, new technique in dynamic measurement and assessment.

REFERENCES:

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