

1017-92-24

**Philip H. Demp\***, 908 Hilltop Road, Cinnaminson, NJ 08077. *Shape Evolution of the Metatarsal Length Pattern from Nonhuman Primates to Modern Humans*. Preliminary report.

This is a pilot study in which we use a conic curve model of the foot structure that is sensitive to aberrant function and can be used to plan more effective conservative and surgical treatments. Model parameters are acquired by planar radiography to determine a diagnostic classification by shape analysis defined by conic curve type and eccentricity. Results indicate that metatarsal length patterns form an ellipse curve among the nonhuman primates and a single branch hyperbola curve among modern humans. These findings suggest that those modern humans whose metatarsal length pattern exhibit an ellipse are considered to have an atavistic pattern which may promote biomechanical inefficiency that could lead to biomechanical pathology. (Received January 15, 2006)