

## 电动跑步机上步态特征获取系统的设计

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摘要：

将柔性阵列压力传感技术应用到跑步机上，设计了一种新的在跑步机上获取步态特征的系统。该系统可以准确获取步长、步频、腾空时间和支撑时间等四个步态特征指标，用于跑步机上跑步的步态特征分析。通过研究不同速度下训练者的步态特征，发现训练者会通过调整步频和步长以达到设定的跑步机跑速；同时，训练者在不同速度下调整的方式是不同的。因此，该研究为今后在电动跑步机上实现速度自适应控制提供了很好的参考。

关键词：柔性阵列压力传感器；跑步机；步态

## Design of A New Gait Acquisition System On The Treadmill

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**Abstract:**

In this paper, a novel gait feature acquiring system on the treadmill is designed by applying the flexible pressure sensing array. The system can accurately provide the following important gait parameters: step length, step frequency, swing time and supporting time, which could be used to the analyzing of gait feature on the treadmill. By study the gait feature at different speed on the treadmill, we find two different speed-adjustment strategies, one is by step frequency and the other one is by step length. Another interesting phenomenon we found is that for the same trainer the speed-adjustment method is not constant as the speed changes. With these new findings, basically we can claim that this study offers a good start point for the future design of speed adaptive control of treadmill.

**Keywords:** Flexible Array Pressure Sensor; Treadmill; Gait

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