PERMEABLE MICRO-LACE ELECTRODES FOR ELECTRODERMAL ACTIVITY

Tech ID: 33554 / UC Case 2024-131-0

PATENT STATUS

Country	Type	Number	Dated	Case
Patent Cooperation Treaty	Published Application	WO 2025/250595	12/04/2025	2024-131

BRIEF DESCRIPTION

Electrodermal activity (EDA) has traditionally been used for monitoring mental activity by measuring skin conductance (SkinG) at locations with high sweat gland density. However, EDA has not been considered useful for physical activity due to baseline shifts caused by sweat accumulation at the skin/electrode interface.

SUGGESTED USES

Measure SkinG at specific locations with high sweat gland density, such as the fingers, to monitor mental activity.
Use water-permeable lace electrodes and multimodal sweat sensors to measure SkinG at the wrist, forearm, and upper arm, which reflect physical activity.
Measure SkinG at two different sites simultaneously to decouple mental and physical activities.

ADVANTAGES

Mental Activity Monitoring: Provides accurate monitoring of mental activity by focusing on specific high-density sweat gland locations.
Physical Activity Monitoring: Introduces a novel method for using EDA as a proxy for sweat rate, enhancing the accuracy of physical activity monitoring.
Simultaneous Monitoring: Offers a robust and reusable physiological activity monitoring platform that can selectively decouple mental and physical activities, improving the accuracy of clinical studies.

RELATED MATERIALS

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OTHER INFORMATION

KEYWORDS

permeable electrode, electrodermal activity, physical activity, mental activity, EDA

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ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- Spectral Kernel Machines With Electrically Tunable Photodetectors
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