

# Self-Powered Piezoelectric-Biosensing Textiles for the Physiological Monitoring and Time-Motion Analysis of Individual Sports

Yupeng Mao <sup>1</sup>, Mailun Shen <sup>1</sup>, Bing Liu <sup>3</sup>, Lili Xing <sup>2</sup>, Song Chen <sup>1,\*</sup> and Xinyu Xue <sup>1,2,\*</sup>

<sup>1</sup> Physical Education Department, Northeastern University, Shenyang 110819, China

<sup>2</sup> School of Physics, University of Electronic Science and Technology of China, Chengdu 610054, China

<sup>3</sup> School of Arts, Beijing Sport University, Beijing 100084, China

\* Correspondence: chensong@pe.neu.edu.cn (S.C.); xuexinyu@mail.neu.edu.cn (X.X.); Tel.: +86-1388-923-0121 (X.X.)

Table S1. The self-powered piezo-biosensing textiles comparison with previous works.

	The power supply mode	The device size	Response range	Detection range	reference
Our work	self-powered	$1.5 \times 4$ cm	0 - 200 +	0 - 25 mmol/L	
Other 1	self-powered	$1 \times 0.5$ cm	0 -95 +	0 - 6.385 mmol/L	25
Other 2	External powered	huge	0 - 5 +	0 - 10 mmol/L	38
Other 3	External powered	$2.5 \times 7.5$ cm	0 - 38 +	0 - 3 mmol/L	39

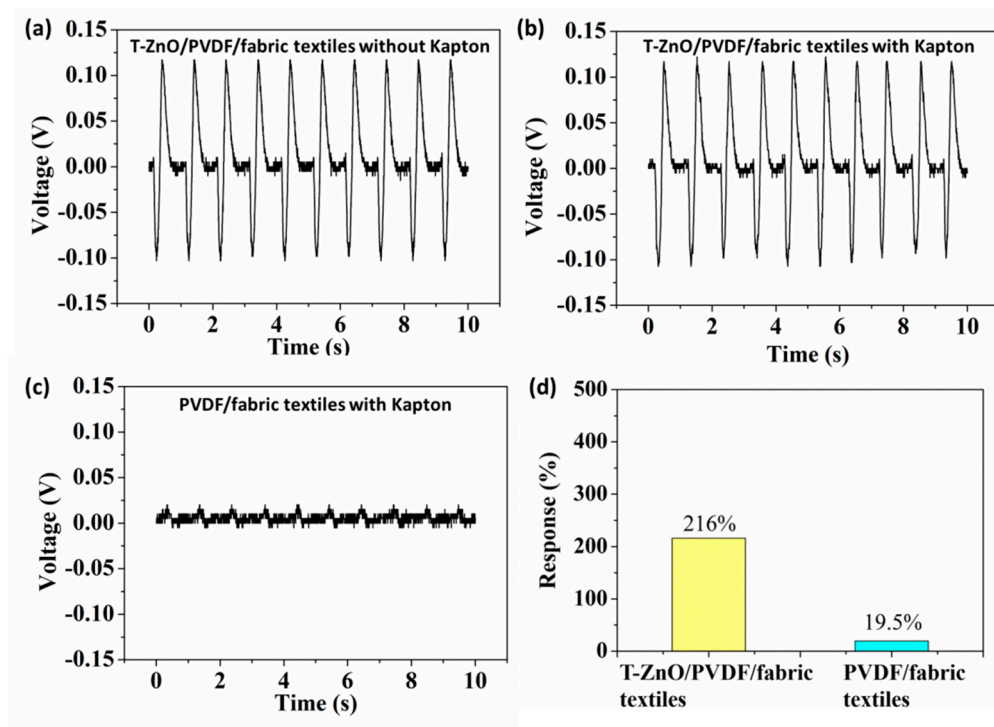


Figure S1. (a) The output voltage of T-ZnO/PVDF/fabric textiles without Kapton substructure. (b) The output voltage of T-ZnO/PVDF/fabric textiles with Kapton substructure. (c) The voltage of PVDF/fabric textiles with Kapton substructure. (d) The response of T-ZnO/PVDF/fabric textiles and PVDF/fabric textiles against 24 mmol/L lactate, respectively.

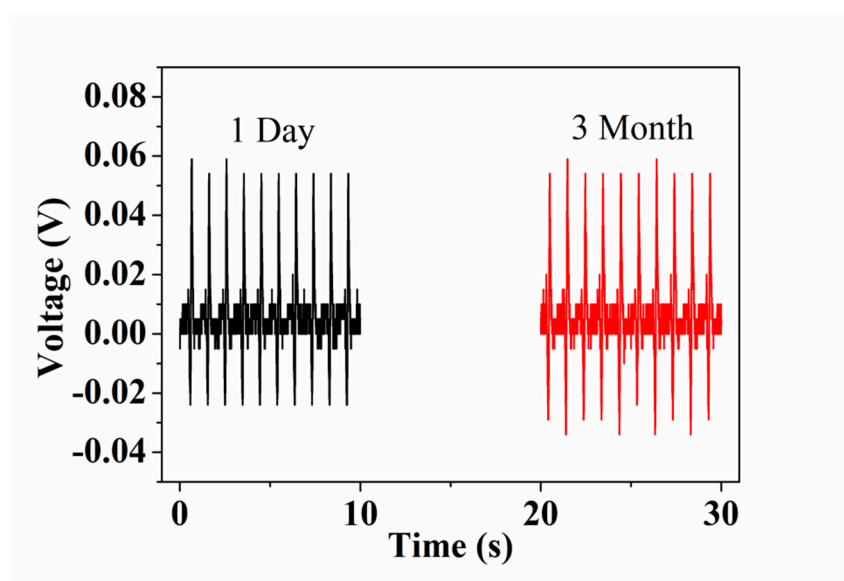
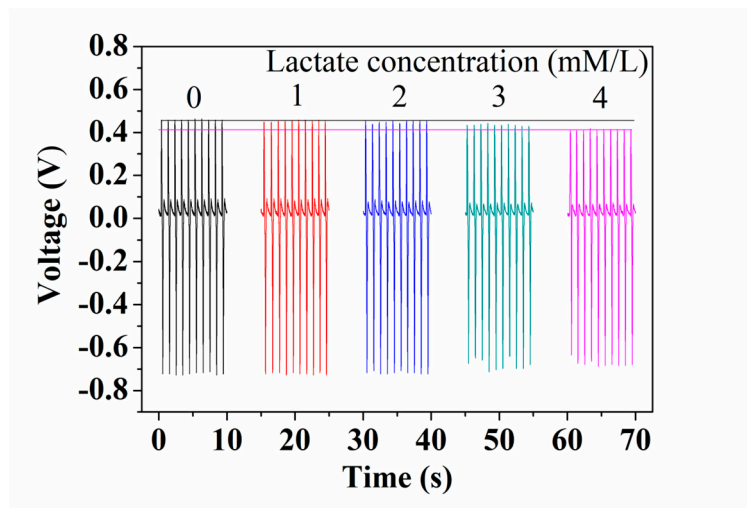


Figure S2. The output voltage of one device after one day and three months, respectively.



**Figure S3.** The sensitivity limit of self-powered piezoelectric-biosensing textiles for detecting lactate concentration