

You'll never run alone. Effect of 'cheering zones' on athlete performance in marathon races.

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Abstract

Although the emotion literature advocates for an influence of positive emotions on sports performance (McCarthy 2011; Vast, Young, and Thomas 2010), quantifying this influence remains a challenge. Among remarkable athletic performances, marathon races are a relevant example of this influence. The establishment of "cheering zones" during marathon races shows how positive emotions and social support are important for athletes to enhance their performances (Buman et al. 2008). Our aim is to quantify the behavioural impact of these cheering zones on athletes pace during marathon races.

In collaboration with Strava Inc. (athlete monitoring application) we analysed the data of 664 athletes who have finished the Dublin marathon in 2014. By analyzing their GPS information the Strava app is calculating the evolution of athletes' pace (min/km) during the marathon. We compared athletes' pace before, during and after the cheering zones in order to identify the influence of positive emotion and social support on athletes' performance.

Generalized Linear Models show not only an effect of cheering zones on athletes' pace ($t = -2.79$, $p < 0.005$) but also an effect of the localisation of these cheering zones ($t = -3.84$, $p < 0.001$). Athletes tend to increase their pace by 0.743% after each cheering zones on average but this effect tend to decrease along the marathon race. This last result is supported by the comparison athlete's pace comparison before and after the cheering zones which is significant only by taken into account their localisation ($t = -35.18$, $p < 0.001$).

Our results are supporting the theory of individual zones of optimal functioning (IZOF) for which feeling the support of others in cheering zones would helps athletes to find the motivation to sublim their performance (Hagtvet and Hanin 2007).

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