This study aims to provide new, in-depth information concerning the need for autonomy in leadership and employee well-being. More specifically, this study examines the mediating role of the fulfilment of basic psychological needs for autonomy, competence, and relatedness in the association between empowering leadership and employees’ work engagement. In order to do this, we sought to determine whether serial need fulfilment (autonomy-competence, autonomy-relatedness) mediates the effect of empowering leadership on work engagement. Drawing on the self-determination theory and Job Demands-Resources (JD-R) Model, we hypothesised that empowering leadership is associated with work engagement via serial need fulfilment. The participants were 110 employees in a preventive vocationally oriented intervention programme. They filled self-administered questionnaires regarding the characteristics of their work environment (QPSNordic), psychological need fulfilment at work (WBNS-FI), and experienced work engagement (UWES-9). The results of the regression and bootstrapping analyses were consistent with the hypothesis. The article discusses the implications of the results for research and practice.