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8 **Activity levels of preterm children at seven years of age**

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32 **MANUSCRIPT CITATION**

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38 **COMMENTARY**

39 Children born very preterm (<32 weeks' gestation) are at a higher risk of various difficulties
40 compared with children born at term, such as increased motor impairment (1). Physical
41 activity is important for the general population, with physical activity often included in
42 healthy living guidelines for children. Physical activity, when measured with questionnaires,
43 has been shown to be reduced in adolescents and young adults who were born very preterm
44 (2,3). Interestingly, when measured objectively with accelerometry, physical activity levels
45 are similar in adolescents and adults born preterm compared with their term born peers (4-7).
46 However, there appears to be little research in younger children born preterm using objective
47 measures of physical activity. Therefore, Lowe and colleagues studied seven-year-old
48 children who were born preterm to examine levels of physical activity and sedentary
49 behaviour compared with term born children (8).

50 This large-scale cohort study of over 6,000 children across the United Kingdom born across
51 the gestational age spectrum (8), found seven-year-old boys born very preterm spent

52 significantly less time in moderate to vigorous physical activity (MVPA) compared with term
53 born boys. Trends were also shown toward reduced total physical activity and increased
54 sedentary time in boys born very preterm, although this association was not significant in
55 fully adjusted models. Lowe and colleagues also found that this association was not mediated
56 by respiratory symptoms, and they also found no association between gestational age and any
57 physical activity measure in girls.

58 Participants in this study showed high levels of MVPA, with many children meeting or
59 exceeding recommended physical activity guidelines. In contrast, previous studies have
60 shown preterm and term born children fail to meet the recommended guidelines (4,5).
61 Comparison of physical activity research is problematic due to the differing methods between
62 studies (e.g. various types of accelerometers, data collection epochs and cut-points for
63 intensity definitions). The monitor used by Lowe and colleagues was an Actigraph uniaxial
64 accelerometer worn around the hip, with previous studies examining preterm physical activity
65 using both the same (4-6) and different accelerometers (7). Further highlighting the
66 disparities between physical activity research methodology, the cut-point used by Lowe and
67 colleagues for MVPA differs with previous research, which may have led to a potential
68 overestimation (or underestimation) of MVPA levels. Thus, caution is needed when
69 considering the results of this study compared to previous physical activity research.

70 In conclusion, this cohort study provides informative and objective data on the physical
71 activity levels of preterm children at seven-years of age, with boys born very preterm having
72 lower physical activity levels compared with term born children. Recent research has
73 examined the factors associated with physical activity in adolescents born preterm (9)
74 however little is currently known in younger children. As this study found that respiratory
75 symptoms did not mediate the association between gestational age and physical activity in
76 seven-year-old children, further work in younger children is needed to examine what factors
77 are associated with physical activity to inform the design of early intervention strategies
78 aimed to improve physical activity in this potentially at-risk population.

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81 **URL TO THE FULL REVIEW ON THE EBNEO WEBSITE:**

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90 **CONFLICTS OF INTEREST**

91 None.

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