·器械研究·

一种用于刷牙指导的互动型电子模型的研制和效果评估

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【摘　要】　目的　研制一种能够帮助学习者更好掌握"水平颤动拂刷法"（改良 Bass 法）刷牙方法的互动型刷牙指导电子模型，并评估其效果。方法　通过电子工程技术设计，研制互动型刷牙指导电子模型样机。选择 73 名受试者，采用分层、随机、对照、检查者盲法设计对其刷牙指导效果进行评估：理论讲授刷牙方法后，分为两组，试验组采用互动型刷牙指导电子模型体验练习；对照组采用普通模型进行体验练习，受试者刷牙，刷牙前后菌斑指数检测，秩和检验比较两组菌斑清除率差异。结果　成功研制互动型刷牙指导电子模型样机，该模型对平颤动拂刷法的要点动作（包括：刷牙力度、牙刷放置角度、刷头运动频率和位移）进行训练并纠错。使用两种模型教授刷牙方法评估教学效果，两组刷牙前菌斑指数秩均数无显著性差异，刷牙后试验组菌斑秩均数（30.97）显著低于对照组（42.86）（$P<0.05$），两组刷牙前后菌斑差值秩均数差别显著（$P<0.05$）。结论　互动型刷牙指导电子模型可强化学习者掌握水平颤动拂刷法的关键动作，有助于提高学习者牙齿菌斑清除率。

【关键字】　互动型刷牙指导电子模型　改良 Bass 刷牙法　菌斑控制

Development and assessment of an interactive electronic model for toothbrushing instruction of modified bass method

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【Abstract】　Objectives　To further enhance oral hygiene skills, especially the key movements in modified Bass technique, an interactive electronic model for toothbrushing instruction was designed, and its effect on oral plaque control of users was evaluated. Methods　Key parameters of modified Bass technique, including force value, the angle of toothbrushing placement, movement frequency and displacement, were transformed into electrical signal bounds realized by electronic engineering technology. With 73 volunteers, a randomized, stratified, examiner-blinded, controlled study was conducted to compare oral plaque control effects: after the oretical teaching of modified Bass technique, volunteers were divided into 2 groups for operation practices using either the electronic interactive model or traditional model. Results　The oral plaque indexes before and posttoothbrushing