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Sommario/riassunto	Long description: An implantable system to invasively acquire muscle activity for controlling a bionic hand prosthesis is presented. The system utilizes two wireless interfaces for data and power transmission. Furthermore, a multichannel custom made low-power application specific integrated circuit (ASIC) was designed in 130 nm technology to amplify, filter and digitize the analogue muscle-activity. A trade-off between power consumption, silicon area and noise was considered during the design phase. The implant system was successfully tested by several animal experiments (sheep and rhesus macaques). The invasively recorded muscle activity possesses a higher amplitude, higher selectivity and more stability than its surface recorded counterpart. It provides an opportunity for simple and smooth control of a hand prosthetic system with high number of degrees of freedom.