



شبكة المعلومات الجامعية

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# شبكة المعلومات الجامعية

## التوثيق الالكتروني والميكرو فيلم

# جامعة عين شمس

التوثيق الالكتروني والميكرو فيلم

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# COCHLEAR IMPLANT IN PATIENTS WITH RESIDUAL HEARING

## THESIS

*Submitted in Partial Fulfillment of Masters Degree In Audiology*

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## Abstract

Cochlear implant is an electronic device, which produces an electrical stimulus that bypasses damaged or missing hair cells in profound sensorineural hearing loss and directly stimulates the remaining auditory neural elements.

Remarkable progress has been made in the design and application of speech-processing strategies for cochlear implants.

Accordingly, this study was designed to assess the speech performance produced by the Spectral peak (SPEAK) and Advanced combination encoders (ACE) strategies.

This study included nine post linguallly deafened adults of both sexes who received the Nucleus 24 (N24) cochlear implant at Kasr EL-Eini Hospitals between November 1998 and September 1999.

## Keywords

- Anatomy of the cochlea.....
- Physiology and psychophysic c  
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- History of electrical stimulation.....
- Components of cochlear implants..



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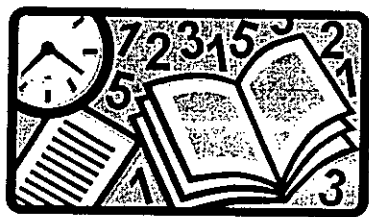
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# LIST OF ABBREVIATIONS

ACE.....	Advanced combination encoders
AGC .....	Automatic gain control
CA.....	Compressed analog
CI .....	Cochlear implant
CIS.....	Continuous Interleaved Sampling
CUNY.....	CITY University of New York
EABR .....	Electric auditory brain stem response
ENG .....	Electronystagmography
F1.....	First formant
F2.....	Second formant
FO .....	Fundamental frequency
HAP.....	Hybrid analog pulsatile
HINT.....	Hearing in noise test
IP.....	Interleaved pulses
MAL.....	Maximum acceptable loudness
MPEAK .....	Multipeak
MSP .....	Minispeech processor
P.B. ....	Phonetically-Balanced words
PPS.....	Paired pulsatile sampler
PPs .....	Pulse per second
QPS .....	Quadruple pulsatile sampler
SAS.....	Simultaneous Analog Stimulation
SMSP.....	Spectralmaxima sound processor
SPEAK.....	Spectral PEAK
SPL .....	Sound pressure level
WDS .....	Word discrimination score
WSP.....	Wearable speech processor

# INTRODUCTION AND RATIONALE



# INTRODUCTION AND RATIONALE

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Cochlear implant is an electronic device, a portion of which is surgically implanted into the cochlea and the remaining portion worn externally like a hearing aid. It functions as sensory aids and, in many cases, as sensory substitutes for one of our keenest senses, that of audition (Miyamoto, 1995).

Cochlear implant produces an electrical stimulus that bypasses the damaged or missing hair cells in profound sensorineural hearing loss and directly stimulates the remaining auditory neural elements (House and Berliner, 1993).

Strategies used for transforming speech input into stimuli for the electrodes can be broadly distinguished by such characteristics as number of channels, use of analog or pulsatile stimuli, and whether particular features of speech inputs are explicitly presented in the pattern of stimulation (Wilson, 1993).

Cochlear implants are used for the rehabilitation of bilaterally deaf patients. Due to the improvement in speech processing, they might be also