REHABILITATION OF DYSARTHRIA

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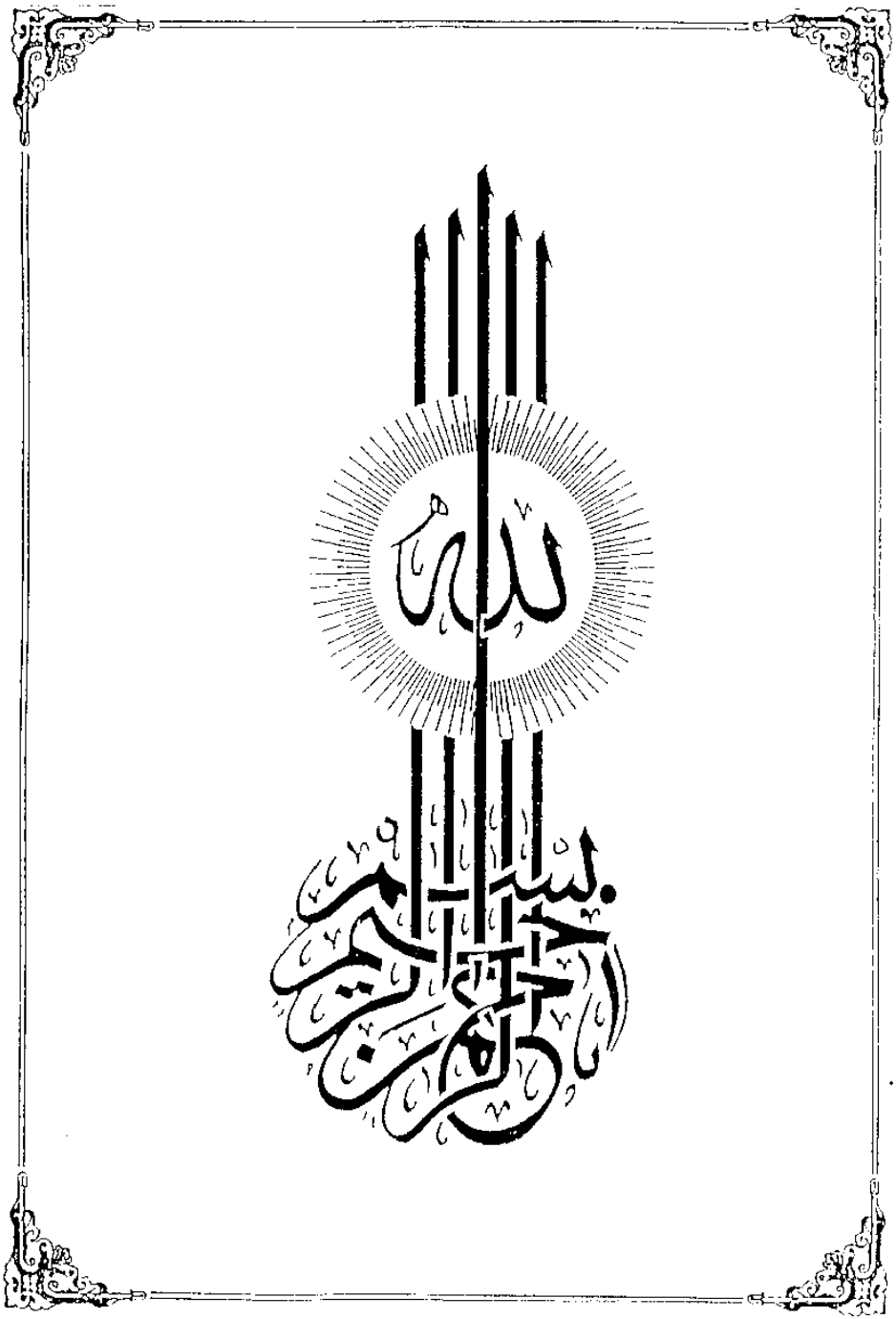

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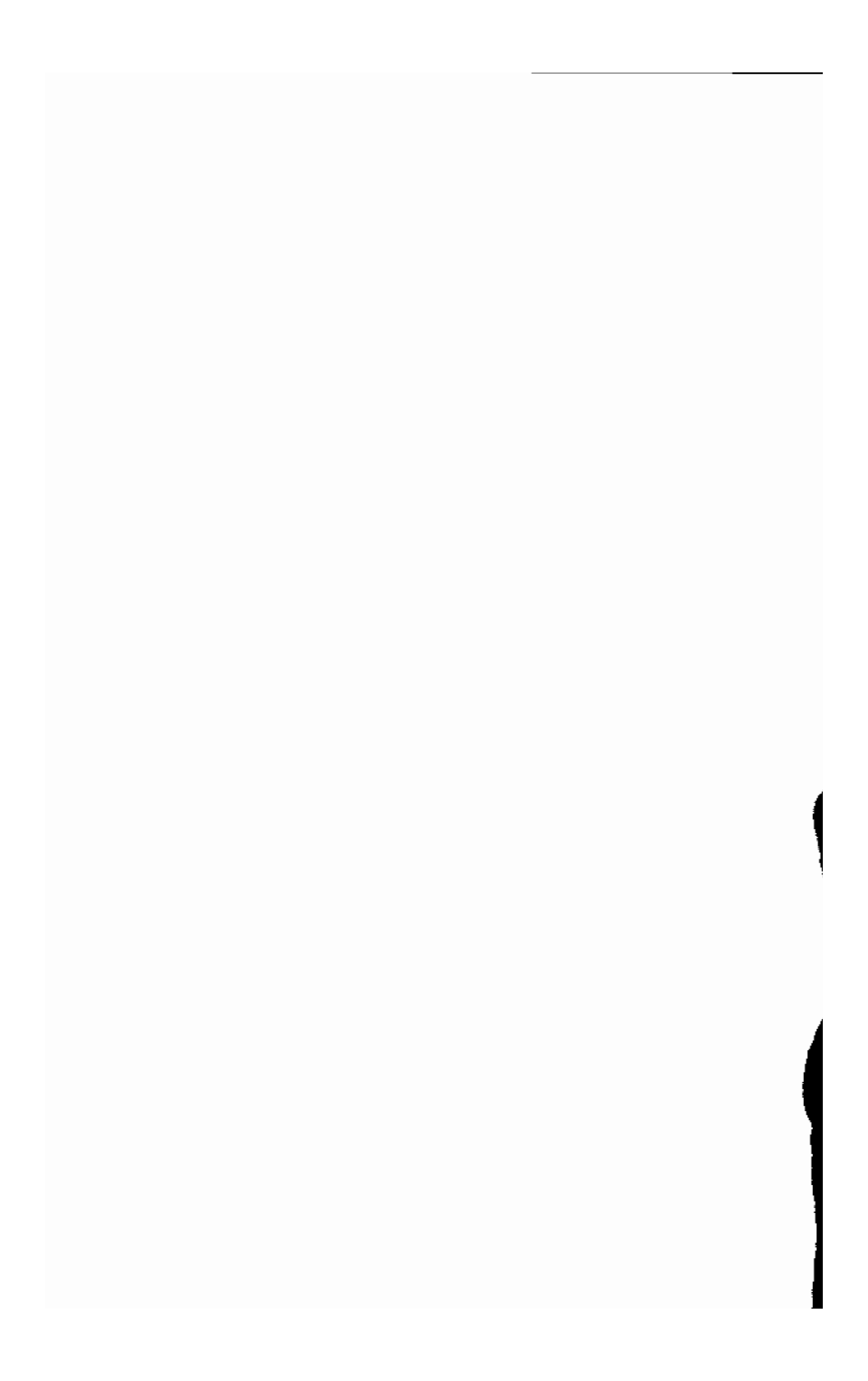

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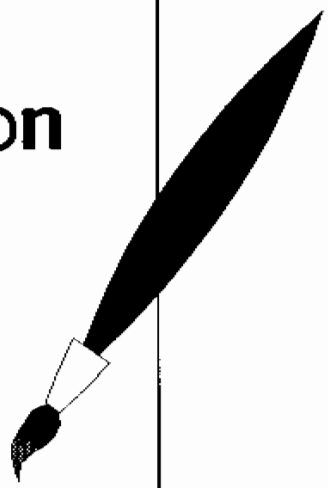

INTRODUCTION

Dysarthrophonia is the speech disorder which has a neurogenic origin ***(Murdoch, 1990).*** The neurological deficit in dysarthrophonia may lead to a breakdown in the motor control of the whole speech system including the excitors, the vibrators and/or the resonators/articulators. The result of the interaction between these "ailing" components of speech apparatus characterizes the various types of dysarthrophonia, depending on which component carries the brunt of the breakdown ***(Kotby et al., 1995).*** Different acoustic types of dysarthrophonia occur with a lesion in a different region of the motor system ***(Griffs and Bough, 1989).***

Dysarthria is that neurologic motor speech impairment which is characterized by slow, weak, impercise, and/or uncoordinated movements of the speech musculature. Literally the term comes from the Greek dys-arthroun, which means "inability to utter distinctly" ***(Yorkston et al., 1988).***

Darley et al. (1975) defined dysarthria as a collective name for a group of related speech disorders that are due to disturbances in muscular control of the speech mechanism resulting from impairment of any of the basic motor processes involved in the execution of speech.

Peacher (1950) has suggested the use of the ter "dysarthrophonia" for neuromuscularly based disorders c speech in which both phonation and articulation are impaire The term encompasses coexisting motor disorders of respiratio phonation, articulation, resonance, and prosody. It als comprises isolated single-process impairment such as isolate articulation problem due to cranial nerve XII involvement or a isolated dysphonia due to unilateral vocal fold paralysis.

According to ***Yorkston and Beukelman (1990),*** differe types of dysarthrophonia have been known into:

1. ***Bulbar (flaccid) dysarthrophonia*** caused by damage to th nerves or their nuclei.
2. ***Suprabulbar (spastic) dysarthrophonia*** results from th spasticity of the peripheral speech musculature because c bilateral upper motor neuron lesion.
3. ***Ataxic (cerebellar) dysarthrophonia*** due to muscula incoordination from a lesion in the cerebellum.
4. ***Hypokinetic (Parkinson's disease) dysarthrophonia*** resu from the rigidity of the peripheral speech musculature as result of breakdown in the basal ganglion.
5. ***Dyskinetic (hyperkinetic) dysarthrophonia:*** It may be due t chorea [that is characterized by quick spontaneou uncontrolled movements due to breakdown in the basa ganglia], dystonia or myoclonus.
6. ***Mixed dysarthrophonia*** results from mixture of diffe types of dysarthrophonia, as in multiple sclerosis.

Since dysarthria comprises a group of related motor speech disorders ***(Darley et al., 1975)***, a detailed assessment of the range and severity of the speech problem is imperative. It is not only necessary to identify the areas that may be involved, but it is also vital to identify the level at which these problems may occur. The areas assessed should include respiratory and phonatory mechanisms; the facility of movement of the speech musculature; articulation; intelligibility; and also the suprasegmental prosodic features of intonation, stress, rhythm, and rate ***(Robertson and Thomson, 1986).***

Although auditory perceptual assessment (APA) is a subjective method in the evaluation of speech, it has the reliability in the differentiation between different dysarthrophonia groups ***(Kotby et al., 1995).***

The goal of treatment program of these patients is to improve speech intelligibility. This is accomplished by a variety of methods, and therefore the program of dysarthria rehabilitation is divided by ***Tonkovich et al. (1986)*** into three major components: exaggerating articulatory methods, reducing speech rate via vowel prolongation and improving speech prosody. Exercises in each component are arranged in a hierarchy from simple to complex so that the patient will not proceed to more difficult material until he has shown, by his correct response, that he has mastered previously presented material. In utilizing the material in this program, the clinician should adapt the program to meet specific needs of each patient.

Initial tasks as articulatory movement, reduced rate, and improved prosody should afford the patient a high degree of success. To assure that, large number of stimuli are included for each task, repeated practice of few stimulus items is more beneficial to dysarthric patients than one trial of many different stimuli, before progressing to more difficult material, the patient should practice appropriate behaviours, reinforcement schedules should be used appropriately, and in promoting generalization of treatment for dysarthric speaker, a group treatment sessions including discussion and special activities might be useful ***(Tonkovich et al., 1986).***

The three components of the rehabilitation program of dysarthria are:

I. Exaggerating articulatory movements: speech intelligibility is largely influenced by articulation. Since most dysarthric clients tend to slight or slur speech sounds, teaching exaggerated articulatory movements is useful for increasing the patient's speech intelligibility through exaggerating oral movements of single vowels and consonants and progress to exaggerated words, phrases, sentences, and finally to conversational speech ***(Darley et al., 1975).***

II. Reducing speech rate via vowel prolongation: Clinical experience has indicated the importance of treating the prosodic features of speech ***(Darley et al., 1975).*** Rate, stress, and intonation make up these features. Since rapid rate frequently characterized the speech of some dysarthric speakers, and since slowed speech often facilitates the

achievement of articulatory targets in others, vowel prolongation can be a useful procedure for rate control. Instructing the patient to extend the length of time in which the vowel is produced increases the amount of time necessary to produce the entire word. Such effort may lead to more intelligible word production ***(Tonkovich et al., 1986).***

III. Improving speech prosody: prosodic aspects of speech are often altered in patients with dysarthria. The stimulus items in this component are designed to provide the patient with practice in stress, intonation, and speech phrasing ***(Clark and Clark, 1977).***

On the other hand, therapy on basic motor process was described by ***Darley et al. (1975) and Rosenberg & LaPointe (1978).*** It includes modification of articulation, phonation, resonance, prosody and respiration. Regarding modification of articulation, ***Darley et al. (1975)*** added syllable by syllable attack and working in isolation on difficult phonemes which require elevation of the tongue tip.

Considering modification of respiration, it is done through training the patient to produce speech at relatively high lung volume and to plan his phrasing so as to avoid speaking on residual air and to modify phonation, the patient is helped to practice on adjustment of pitch, loudness and voice quality through Smith Accent Method. In addition to training the patient to bring about velopharyngeal closure to reduce hypernasality and nasal emission of air ***(Darley et al., 1975).*** Lastly, regarding

prosody, ***Darley et al. (1975)*** added that varying the length of the vowels in syllables will break up stress equalization.

Thus, there are several areas to work on in rehabilitation of the dysarthric patients and each one passes by a hierarchy of levels from simple to complex in order to reach the best chance of improvement of each case; within the limits of the degree, extent and nature of the problem. Still there is no available processed program in Arabic language that is documented and helpful as a material for therapy of such cases uptill now.