II Speech Therapy Report

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"In order to provide enough breath for the spoken work, there must be enough air intake to have voluntary control of inhalation and exhalation."

"In order to provide sufficient breathing capacity for continuous or phrased speech a child should be able to sustain an even exhalation for a minimum of ten seconds."

The abovementioned statements by Keats in his books on Cerebral Palsy form the basis of our programme of breathing therapy. After having treated dysarthric patients for several years, it has become apparent that although we have achieved improvement of the articulation of isolated sounds; words as well as spontaneous speech still seem to be indistinct and difficult to understand. This we found was caused primarily by breathing problems, as the children did not have enough air intake for the voluntary control of inhalation and exhalation.

1. SELECTION OF CHILDREN FOR THE PROGRAMME:

Eight children were selected. All the candidates had received therapy for three years or more, without apparent success. The four boys and four girls chosen, varied in age and degree of severity of dysarthria.

Case 1—
Case 3—
Case 2 — less afflicted
Case 8—
Case 6—

Case 4—
Case 7— severely handicapped
Case 5—

The severe cases had a speech pattern marked by long shallow inhalation and exhalation immediately prior to vocalization.

This resulted in their being able to say only one or two words on one inhalation. There was no air built up for plosive sounds and no airflow for fricatives. These children could however say plosives as well as fricatives in isolation, but the plosives were weak and the airflow in the fricatives was short.

The less afflicted cases could say more words per inhalation. They tended however to say as many words as possible on one inhalation. This resulted in incorrect phrasing, the phrasing being dependent on the number of words they could cram into one exhalation. The plosive and fricative sound endings of words were omitted. Often the articulatory movements were made, but these were not accompanied by sound. Inhalation took a long time and was very shallow. This resulted in the straining of voices and a tendency to use a higher pitch towards the end of phrases.

2. AIMS OF THE PROGRAMME:

1. *Deep inhalation* with *controlled exhalation* while producing sound.
2. *Fast inhalation* with *prolonged exhalation* while producing sound.
3. *Improvement of speech* — working from sounds to syllables, and from mono-syllabic words to multi-syllabled words.
4. Improvement of *speech in sentences*, by breaking sentences down into shorter more acceptable phrases which were within the capacity of each child.

3. THERAPY:

Therapy commenced by trying to increase the phonation time.

(a) The time limit we tried to achieve was ten seconds which none of the cases could do. This was attained by gradually lengthening the period of vocalization on exhalation. The following tasks were given in the training process:
   (i) Humming.
   (ii) Sustained blowing.
   (iii) Prolongating vowel sounds until ten seconds was attained.
   (iv) Prolongating fricative sounds.

(b) **Consonant and vowel combinations:**
Consonant and vowels were combined:
for example pa, ta, ka
po, pie, pou etc.
and again we tried to reach the ten seconds limit. No initial carry over from the basic training was present. Work was done on this aspect and the goal was reached in a much shorter period of time. As the vital capacity of the children increased, so the vocalization also showed improvement.

(c) We now introduced the stage where a quick, deep inhalation and a long controlled exhalation with sound, was demanded.
For example a — / a —
We worked until they reached the stage where they could prolong the vowel for ten seconds, inhale for two seconds and again vocalize for ten seconds, for sixty seconds without stopping.

(d) The next step was the introduction of words. Words were built on the previous successes.

For example		
	ma	pack
	mat	pale
	matter	pattern
	matters	patterning
	maternal	packaging, etc.
	material	
	pa	

(e) **Introduction of sentences:**
We started with two word sentences. The length of the sentences was increased by adding more words containing plosive and fricative sounds to the sentences.

For example
My cat.
My cat walks.
This cat walks.
This kitten talks, etc.

(f) **Phrasing:**
These children had to be taught to use meaningful phrases which were suited to their newly acquired breathing pattern. This was started off by the reading of simple sentences. We worked towards more complex sentences, with more words per sentence.

For example
The cat / sits.
The cat / sits / on the mat.
I / would like / everybody / to come / and help us / as soon / as they can manage /

Phrasing was initially indicated by the therapist. The children then had to build their own sentences. In this way we worked towards carry over into spontaneous speech.

(g) **General.**
The children were seen immediately after they had received their physiotherapy treatment.

Throughout the programme the therapist strove not to draw the children's attention directly to their breathing. This was attained by referring only to their speech and where they had to rest, and where to pause and not to breathing per sé.

For example A child was never told to "take a deep breath and say. . . ." but rather to "rest after you have said. . . ." and "before you continue saying. . . ."

4. **RESULTS OF THERAPY:**

At the end of the six months trial period:

Cases 1 and 3, were able to phrase their sentences in the correct way and carried this over into spontaneous speech.

Cases 2, 6 and 8, reached the stage where phrasing was done by the therapist.

Cases 4, 5, 7, were still at step 5, learning to pronounce simple sentences, containing plosives and fricative sounds, in the correct way.

Therapy was interrupted for two months during the December holidays. No home-programmes were given.

After this period all the candidates were still on the same level of achievement except case 7 who had regressed. After therapy was resumed, the latter case reached his previous level of achievement within three weeks.

Now, after two months in the new year, cases 1 and 3 are seen only once a week for the purpose of maintenance. Cases 2, 6 and 8 are on a spontaneous level during therapy but no carry over has occurred in other situations, for example, class, hostel, playground, etc.

Case 4: is working on the phrasing of compound sentences.

Case 7: is working on sentences which have a high frequency of plosive and fricatives.

Case 5: This child proved to be too young for this study. Therapy had to be done on an indirect level and the normal programme (as mentioned earlier) could not be followed. He does however show marked improvement in spontaneous speech as such.

Conclusion:

Tape recordings were made during the different stages of the project. It was however very difficult to do this experiment on a scientific basis, because of the difficulty in getting control groups, as well as the limitations of the scientific data.

It is thus apparent that this was just an experiment. The programme asks for refinement and should be done more extensively. It was however shown by this experiment that by improving the breathing patterns, more distinct speech can be attained.

References:

BECKETT, R. L.: The Respirometer as a Diagnostic and Clinical Tool in the Speech Clinic, J.S.H.D. May 1971, Vol. 36, No. 2, p. 235-241.

KEATS, S.: Cerebral Palsy. Charles C. Thomas, Springfield, Illinois, U.S.A.

Book Review

FROM CONCEPTION TO BIRTH. Roberts Rugh & Landrum B. Shettles. George Allen & Unwin Ltd. R13,10.

The authors of this book are, respectively, an experimental embryologist/researcher and a gynaecologist. While the book is aimed at prospective parents primarily, it is written at a high 'lay-level' and profusely illustrated with numerous charts, diagrams, photographs and some superb colour plates of the foetus in utero. Part 1 covers very lucidly and in great detail, the anatomy and physiology of ovulation, fertilization, implantation and the subsequent growth and development of the embryo and foetus. The supporting photographs are fascinating, though it is perhaps debateable whether a susceptible pregnant woman really wants to come face to face with the features of her 5-6 weeks old foetus!

The stages of labour are described, and the actual delivery well photographed in sequence, which gives one the feeling of actually watching the birth. Any physiotherapist conducting ante-natal classes should find these of value in illustrating her lectures.

Caesarian section is only briefly dealt with, but no other deviations from the straight forward delivery are offered.

Routine care of the neonate, including explanation of the Agpar rating and assessment, is discussed.

Part 2 deals with ante- and post-natal care and rehabilitation including lactation and the value of nutrition and balanced diets. Exercises and relaxation are recommended from the 3rd or 4th month through to delivery and some simple examples shown, though no guidance is given about classes in this field. In the post-natal section exercises are described and illustrated, stress being laid on the need to seek sanction of the doctor or physiotherapist in formulating a working programme. Family planning and modern contraceptive methods are evaluated.

Finally genetics, heredity, the R.H. factor, dominant and recessive characteristics etc., are discussed and tabulated, and a full glossary and extensive bibliography round off a book which contains a mine of information on a host of topics which seldom feature in one book.

To the lay woman seeking information in greater depth than that usually offered, I would rate it highly for dealing with the subject very much in the round. To the physiotherapist intending to specialise in obstetric work, I think it would be a very useful 'refresher course' to get her subject into perspective before further detailed reading at a deeper medical level, while to the established ante-natal teacher it will be much appreciated by her pupils for the excellent illustrations, the quality of which must be responsible for the price!

N. V. Rosemary Harte (Reviewer)