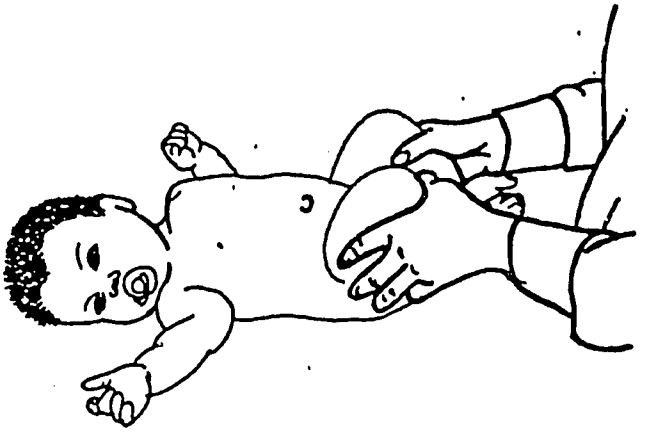
PHYSICAL REHABILITATION IN MALI.



A review of the existing services, and recommendations for improvement.

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EXECUTIVE SUMMARY

Following a request by the Malian Government to assist in the rehabilitation of Tenemaken Keita, an eleven year old child, paralysed as a result of the events of March 26th.1991, USAID has commissioned this report on the existing rehabilitation services in Mali. Tenemaken is a long term patient of Gabrielle Touré Hospital, where he continues to receive assistance from the American Embassy.

It is estimated that over 10% of the population of Mali, is disabled in some way. In this study the various sites of rehabilitation activity in Bamako and Kati were visited, and Kinésiethérapeutes (the Malian equivalent of Physical Therapists) with a variety of educational backgrounds, were interviewed and observed at work.

The standard of typical therapeutic treatment was found to be lacking. The resulting rehabilitation of injured and/or disabled people, is unsatisfactory in many cases, and the patient does not always therefore manage to reach his potential.The Kinésiethérapeutes are aware of their limitations with regards to treatment skills, and are keen to upgrade them.

To date, there has been little outside interest in the rehabilitation services being offered in Mali, with only relatively small funding being channelled through the two existing locally formed associations for people with disabilities.

Should the recommended form of assistance to the existing rehabilitation structure, be provided, one can assure that in future cases such as that of Tenemaken Keita, a faster and more functional, more directed rehabilitation will be forthcoming, allowing the patient a speedier return to active life as a member of the community.

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1. INTRODUCTION

In early 1992, the theme of physical rehabilitation services in Mali, was brought to the attention of USAID via a request for assistance received by the American Embassy. Assistance was requested for the care and rehabilitation of an eleven year old child who was seriously injured during the events of March 1991, which precluded the fall from power of the Moussa Traore dictatorship, and the establishment of an interim government pledged to establish a structure for democracy in Mali.
The child, Tenemaken Keita, sustained a fracture and spinal cord lesion at thoracic spine level, leaving his lower limbs paralysed for life. After a spell of hospital care in Libya, Tenemaken returned to Bamako with some medical complications, and has become a long term patient in Gabriel Touré Hospital.
The initial response to the government's request for help, was to investigate the possibilities of sending Tenemaken to the USA for rehabilitation. This approach would be costly, would be difficult on the part of the patient and his family due to cultural and linguistic constraints, and it is questionable how sustainable this form of intervention would be on the part of the patient, who would adapt to his disability in a totally different environment.
When it became evident that this would not be a practical option, it was decided to look for other more realistic alternatives which would benefit a larger target group, but also Tenemaken, and which would prove sustainable.
This report has been commissioned by USAID to look into the existing rehabilitation services in Mali, to evaluate the problems and advise on an appropriate and practical form of assistance.

2. DISABILITY IN MALI

There has been no research done on country scale, but considering the world-wide average of 10% of the population being disabled in some way (UNICEF, One in Ten, 1988), one can easily assume that upwards of 10% will be disabled in Mali, the fourth poorest country in the world (UNICEF, The State of the World's Children, 1992).

43% of the population of Mali is under the age of 15 years (UNICEF 1989), and a survey carried out in Bamako in 1987 amongst 9000 children in the 0 to 5 year age group showed that 14.6% of children suffer from some form of disability. (AMALDEME 1987).

3. AIMS and OBJECTIVES

The objectives of this study are to determine:
a. the existing rehabilitation services in Mali;
b. the need for assistance;
c. the opportunities for intervention;
d. to recommend a suitable form of sustainable intervention.

The aim is to assist the Malian Rehabilitation services to be able to provide a more comprehensive rehabilitation both for severe trauma cases like Tenemaken, and for the disabled population in general.

4. METHODOLOGY

The majority of existing government rehabilitation services and all registered Associations of handicapped people, are based in Bamako. It was therefore decided to concentrate the available time on visiting these sites.
After initial consultation with Professor Abdou Touré, Traumatologue at Gabrielle Touré Hospital and Director of the School of Masso-Kinésiethérapie in Bamako, introductions were made at the various sites, and each were visited a number of times over the following 3 weeks.

Sites visited:
1. AMALDEME - Association de Lutte contra les Déficiences Mentales chez l'Enfant.
2. CRHP - Centre de Réadaption des Handicappé Physiques.
3. ESS - Ecole Secondaire de la Santé.
4. HGT - Hôpital Gabrielle Touré.
5. Institut Marchoux.
6. INRFPHP - Institut Nationale pour la Réadaption et la Formation Professionelle des Handicappés Physique.
7. Kati Hospital.
8. PMI Centrale - Centre de Réeducation Fonctionelle et Psychomotrice, Soundiata.
9. Point G Hospital.

Sites not visited:
a. CRHP - Gao (staffed by MoH).
b. CRHP - Segou. " "
c. CRHP - Niono. " "
d. Kinésiethérapie service, Kai.
e. Kinésiethérapie service Sikasso.

5. FINDINGS

To generalise, all Kinésiethérapeutes visited were welcoming, and open to discussing their work, their backgrounds and the positive and negative aspects of the rehabilitation services being offered in Mali.

Kinésiethérapeutes

5.1 Educational Background:

The educational background of the Kinésiethérapeutes encountered in Bamako is varied. A few have studied in France, two in Tunisia and one in Jugoslavia, but by far the majority are graduates of the 'Centre de Specialisation des Techniques de la Santé,' a division of the 'Ecole Secondaire de la Santé.'(ESS).
The training course in Masso-Kinésiethérapie (MK) was established in 1984, the first intake studying a four year curriculum. However, this was the only year to complete four years, and since then the course has been reduced to two years.
The MK course is open to those who have already undergone a three year training to become a nurse, midwife or laboratory technician, and who have had a further three years of practical on the job experience. On successful completion of an entrance exam, the candidate is accepted for two more years of full-time specialised study.
The final examinations are written, oral and practical, and after passing them, they are classified as 'Infirmière d'Etat, Technicien Superièure'.

Those who studied outside Mali, did so with the aid of a government grant. Schools abroad have their own specified entry requirements, but in general, the required minimum is the baccalaureate.

The consensus amongst the Malian trained therapists is that those Kinés trained abroad have a better technical education, have a wider variety of therapeutic techniques, and are more confident. However, in practise, there was no obvious difference to be seen when observing. One therapist did explain that over the years she has conformed to treatments performed by the others, even though she knows that they are not always correct.

It was noted that some Bamako trained therapists have difficulty in adopting the identity and skills of a Kiné. This may be due to their lengthy nursing background prior to training, but it is also likely to be due in part to their formal classification.

Physical therapy is a practical skill, the basis of which are techniques of movement and of handling people. The name "Kinésiethérapie" comes from the word kinesiology, the study of human movement. Due to the poor facilities at the school,

therapists have little opportunity to participate in practical sessions. They tend to be observers whilst the teacher demonstrates on a volunteer. They therefore have little or no opportunity to feel what treatments are like, to learn by changing role from therapist to patient, and to correct one anothers technique. The students are therefore left in the difficult position of learning techniques directly on the patient, in a clinical setting. Quality can not be guaranteed in such a case.

5.2 Conditions Commonly Treated:

Paediatric -	Adult -
Post injection paralysis of lower limb,	Post fracture,
Poliomyelitis,	Hemiplegia,
Paraplegia, post trauma and pathological,	Back / neck pain,
Cerebral Palsy,	Gynaecological,
Erb's Palsy,	Post burns,
Perthes Disease,	Head injury,
others.	others.

5.3 Treatment Skills:

Treatments observed at the nine sights visited were of varying quality, but one can generalise by saying that they were of little variety.
Obviously there were some differences in the treatment abilities of the individual therapists, and some appeared to be more motivated and better skilled than others, but the general impression was of an inability of the Kinés to translate their theoretical knowledge, which is good, into appropriate functional treatment activities. Even amongst those who had trained abroad it was obvious that they had learned "standard treatments" which are rarely appropriate. There is also an absence of progression of treatments, eg. a patient may receive the same exercises in each treatment session, without ever having those exercises developed to suit his stage of recovery, or indeed reduced as his symptoms dictate.

As is commonly seen in developing countries, emphasis is placed on the use of modern technology, in this case, electrotherapy modalities. However, these tend to be used indiscriminately, and nearly all patients will receive some form of electrotherapy treatment, whether it is indicated for their condition, or not.
More than one therapist stated that this situation is reinforced by the demands placed upon the therapists by the patients themselves, who have the attitude that it is modern, therefore it must be good. Adult patients pay for their treatment, and so feel that they should have say in what they receive.

There is a need for the therapists to communicate better with their patients and to educate them in benefits of the treatment they are receiving, and in prevention of secondary problems or repeat injury.

Some examples that are typical:
In several clinics, Infra-red irradiation is almost always the precursor to treatment. The individuals suitability for such treatment is not however, always taken into account, and technique is bad, to the extent that it would be considered dangerous practise in either USA or UK.
Babies as young as 4 months were being irradiated, this is contraindicated. One depends on the patients sensation, his understanding, and his ability to tell if he is being burned, there is no regard for this.

In two different clinics treatment by forced passive movement, beyond advisable limits and well beyond the pain threshold, was observed. Later on, it was remarked upon that there was a suspension frame and slings for mobilizing exercises, the therapist replied that "the slings are used to tie patients down who can not stand the pain of treatment". This was not a flippant remark.

In the case of Tenemaken Keita the therapists were concerned that his lower limbs were externally rotating, so they made plaster leg supports to hold them in neutral. However, for T, the position of his legs has little to do with his rehabilitation, the goals of which are almost exclusively functional eg. being able to manoeuvre independently in a wheelchair, transfer to the toilet / bed etc. Due to his spinal cord lesion, T has no sensation in his lower limbs, he is therefore unaware of pressure, which would normally cause discomfort and cause a person to change position. He did not complain about his splints, and the pressure caused by the weight of his limbs in them, caused tissue breakdown in the form of two large ulcers on his left heel.

In underdeveloped countries, infected pressure sores are one of the main causes of death in persons with spinal cord injuries. (David Werner 'Disabled Village Children' 1988).

Although their intentions were good, the therapists in fact predisposed T to these pressure sores by a lack of understanding of the goals of his rehabilitation, and by ignorance of the dangers of splinting paralysed limbs.

On the positive side, a few inventive treatment techniques were observed. One baby with an Erb's Palsy, although she had infra-red heat treatment to begin with, was handled very well by the therapist, and given appropriate passive exercises followed by stimulation of active movement. The arm was then splinted ingeniously but simply, in a functional position, using cardboard. However, in general, the absence of toys to stimulate children was

noted. Paediatric cases, including small babies, are treated in a style similar to adults, and the use of play and other techniques to stimulate active exercise are lacking. Treatments tend to be passive as a result.

5.4 Specific Areas of Competence, Confidence and Interest:

Apart from the Kinés working at the Institut Marchoux, who have had specialised training, and work only in the treatment of Leprosy, the majority of Kinés spoken to stated a preference for post fracture rehabilitation. They feel that this is where the emphasis lies in their training, and as it is a strength, they are generally more confident in this field.
Areas where they particularly lack confidence are in the treatment of neurological conditions, such as hemiplegia and cerebral palsy (hence the high turnover of staff at AMALDEME).
Amongst those who regularly do treat stroke patients, it was noted that the approach is mechanical as opposed to functional.

5.5 Continuing Education:

On the whole, none of the Kinésiethérapeutes have had any form of post qualification training. The few exceptions being the Kinés at the Institut Marchoux, and to some extent, the Kinés at CRHP, who have a Canadian volunteer working with them. However, his tends to be more of a supervisory role.

Interest was expressed by almost everyone in having further training in the treatment of specific conditions such as hemiplegia, peripheral nerve injury, low back pain, arthritis and chest conditions.

5.6 Attitudes:

There was a general air of despondency amongst some of the therapists encountered. This was partly due to the wider problem of low salary and making ends meet, but also to poor work conditions, and the denial of recognition for the work being done by Kinésiethérapeutes. eg.In one of the hospitals, there was initially a Kiné treatment room, but this was taken away from them to provide a consultation room when a new doctor arrived.

5.7 Facilities:

The facilities available for rehabilitation activities are variable, and more detailed information can be found in the Appendices.
Of the 7 treatment centres, 5 have adequate space, though the room at HGT is considered to be on the small side.
Neither Point G, nor Kati Hospital, has a room designated for physical therapy activities, and the INRFPHP are in the process of fund raising with the aim of building and equipping a room for rehabilitation.

Three of the 7 centres, CRHP, PMI, and the Inst. Marchoux, are well equipped, ie. are equipped well enough to meet their needs, although some small additions could increase the variety of techniques used. Nevertheless, it must be noted that much of the equipment in CRHP and PMI are in need of maintenance.

AMALDEME until 1992 had very little equipment, and virtually none that was appropriate. However, with external assistance already received this year, and with the foreseen arrival of a volunteer physiotherapist, (also bringing equipment funding), their situation is improving.

Notably, it is the remaining government run, hospital services, which are inadequately equipped. HGT has only a small amount of basic equipment, Kati Hospital and Point G Hospital have none.

5.8 Ecole Secondaire de la Santé:

The ESS uses 3 small rooms for teaching purposes, 2 are class rooms with desks and tables, and one is a gym, which is basically an empty room with linoleum flooring.
Apart from desks, chairs, blackboards and one articulated skeleton, there are no training materials, and the small library situated in the Director's office is inadequately stocked, and ineffectively used.

Facilities for practical teaching and experiential learning are sorely lacking, the one 'practical' space provided being no more than an empty room. When demonstrating techniques, the teachers have to adapt whatever is on hand eg. push school desks together to form a treatment couch.

5.9 Perceived Needs of Malian Kinésiethérapeutes:

On the whole, the Kinésiethérapeutes interviewed were frank regarding their educational weaknesses. When asked about their needs, there was a general consensus, ie. further training through seminars, provision of equipment, the formation of an professional Association, visits to rehabilitation centres in other countries, information / publications.
Prioritising the needs depended on the situation. Staff at CRHP for example were more interested in the provision of electrotherapy machines, whilst those at PMI, although acknowledging a need for equipment, were more interested in upgrading their skills. Others felt that the formation of an Association was of importance towards gaining professional acceptability and a better share of the resources.
The need for improved basic training at ESS was mentioned by several. It was felt that the practical teaching facilities, and the reference library should be improved. Some suggested upgrading the course by reintroducing the 4 year curriculum.

5.10 NGOs Working with Disabled:

There is little input from NGOs into the field of Disability in Mali, and what is being done is support through funding, rather than any active form of intervention, or programming.

1. Action on Disability and Development (ADD).
   A British NGO, presently based in Burkina Faso, but hoping to expand their activities in Mali. Work with groups of disabled people, mainly in the field of advocacy.
2. World Vision.
   Provides individual child sponsorship for children attending CRHP and AMALDEME.
3. PLAN International.
   Provides child sponsorship, aids in the identification of disabled children (only in Sanankoroba arrondissement), and their subsequent referral and transportation to specialist services in Bamako.
4. Association des Groupements d'Eglises et Missions Protestantes Evangeliques du Mali (AGEMPEM).
   Involved in working with the blind, and with funding for CRHP.
5. Association Malienne d'Aide aux Malades Mentaux (AMAMM).
   Working with the mentally ill.

6. CONCLUSIONS:

The rehabilitation services existing in Mali are insufficient considering the size of the population, the distribution of the population, and the high disability statistics.

Disability is an issue that must be addressed in Mali. The Government has set in place a system with this aim, namely training for, and placement of, Kinésiethérapeutes working both in conjunction with locally formed Associations of people with handicaps (ie. CRHP, AMALDEME), with an international research foundation, (ie.the Institut Marchoux), and directly for the Ministry of Health (Hospitals and clinics).

However, the Ministry of Health has had difficulty in funding the equipping and upkeep of such a service, and has been unable to provide continual training to guarantee the quality of therapeutic treatment. Hence, those services which are run by the Ministry in particular, have difficulties in maintaining high standards of rehabilitation. It is not to say that those services which are jointly funded necessarily offer a better quality of treatment, but one can generalise that they are better equipped and supported (eg. Canadian Physiotherapy volunteer CRHP), due to external funding.

7. RECOMMENDATIONS

To improve the quality of rehabilitation received by the population, and to offer a form of comprehensive and sustainable assistance to the existing rehabilitation services in Mali, it is necessary to have input at differing levels:

1. Clinical - Technical assistance / Skills transfer and equipping, at chosen sites.
2. Training - Assistance to ESS, thereby reaching those Kinés presently being trained.
3. Country - Assisting in the formation of an Association of Kinésiethérapeutes, and visiting Kinés in isolated areas.

7.1 Clinical

7.1.a. Technical Assistance / Skills Transfer:

It is evident, both from time spent observing the Malian Kinésiethérapeutes at work, and from listening to their opinions, that their primary weakness is in the evaluation of rehabilitation needs, and the correct and appropriate application of therapeutic treatment techniques.
The Kinés appear comfortable with basic sciences and theory, but

have lacked good role models with whom to work to learn good technique. Their work is unsupervised, and they get no feedback. On the job, clinical technical assistance would offer the possibility of upgrading the standard of rehabilitation in selected centres, by means of participatory transfer of skills. By working together on a daily basis and building up rapport and confidence, the technical assistant (TA) would be well positioned to advise, assist, explain and demonstrate, as the needs arise.

Site specific meetings / training sessions by Malian Kinés:
An essential component to the "handing down of knowledge" through successive generations of Malian therapists, would include inservice training sessions encouraging skills transfer between themselves. The role of the TA would be to assist in the establishment of such sessions, help organise them and advise on content and technique.

7.1.b. Equipment:

As aforementioned, some therapy departments are better equipped than others, and some are more in need of maintenance of that which exists, than of provision of equipment.
There are the obvious needs where no equipment exists, but even in those cases where they have the basics, small editions would improve assessment techniques eg. measuring tapes, goniometers, tendon hammers, and increase the possible variety of treatment techniques being used. The provision of basic equipment would help towards improving the general working conditions, and therefore motivation, of therapists. Most important of all, it would offer a greater variety of rehabilitation aids to the disabled and infirm population both in hospital, and attending out-patient clinics.

With the aim of keeping costs low, and of demonstrating to therapists and patients alike, the possibilities of using locally made therapeutic equipment, it is advised where possible to have items purchased or constructed in Mali.

Two electrotherapy machines are included in the recommended budget. Although there are difficulties with maintenance and repair of such items, they are almost universally used in Mali. Their purchase is therefore recommended for use in training Kiné students at ESS, in their correct and safe application. Basic care of the equipment can also be taught, to encourage longevity of the machine, and further ensure safety.

It must be emphasised that the provision of equipment may be of little use where the expertise in how to use that equipment is missing. For this reason, it would be envisaged that the bulk of equipment would be supplied to those centres where technical input would also be given. With reference to the above ie. equipping in small items to increase motivation, it would be recommended that where a specific item is supplied, such as a goniometer, short teaching sessions on it's use could be provided as part of the educational role of the Association (Ref. 3.a).

7.2 Training

It is advised to assist the ESS Masso-Kinésiethérapie course by the provision of basic equipment, teaching materials, and the teaching of practical physical therapy techniques.

7.2.a. Equipment:

Equipping in the form of basic items to encourage practical participation of students, would include such items as treatment couches, wall bars, mirrors, stools, wobble boards etc.
Most of these items are for the gymnasium, and a list was drawn up in collaboration with the Medical Gymnast who teaches sessions at the school.
It is suggested that one of the classrooms be further equipped with three treatment couches, pillows, sheets etc. to enable the practise of massage, electrotherapy and exercise techniques, under supervision.

7.2.b. Teaching Materials:

Teaching materials to date consist of two blackboards, and an articulated skeleton for illustrating anatomy.
The library has only a very few, very old books, and therefore a budget is suggested for the provision of suitable texts on Kinésiethérapie, in French. The ideal would be texts adapted to the context of developing countries, treatment orientated, with emphasis on concrete methods, rather than theory.
Periodic professional journals are important in keeping abreast of new techniques and research as it develops, they also promote a sense of pride in the profession and a kinship with other physical therapists worldwide.
As noted earlier, it seems that the Kiné students are not used to using reference books, the purchases of a Xerox machine and provision of paper, would make the texts more accessible, not only to students, but to qualified Kinés. Photocopy facilities would also facilitate communication between Association members with regards to information on meetings etc.

7.2.c. Practical Teaching Sessions:

These should be provided by the TAs, one day per week to ensure that students learn safe, effective techniques of treatment, and to improve the variety of treatments being learned. In this way it is hoped to reinforce the teaching of good techniques in the clinical situation.

7.3 Country:

7.3.a. Association of Kinésiethérapeutes:

It is envisaged for the TAs to assist in the formation and function of a Malian Association of Kinésiethérapeutes.
Such an association, once established, would provide a continual forum for the exchange of ideas, by the organisation of seminars and meetings.
Grouped as an association, the Kinés can raise their profile towards gaining acceptance as a profession, and an increased share of resources. By raising their profile, the medical profession will become more aware of rehabilitation, and patient care can only improve as a result.
The association will act as a link, being able to provide advice and support (morale if not material), to rehabilitation services in the regions.

One Kinésiethérapeute, representing Malian Kinés, and chosen by the Association, will visit a rehabilitation programme in a neighbouring country, and report back on his/her experiences and impressions. The programme being visited would have to be in a nearby francophone country, with a similar economic status, but with a rehabilitation programme that is known to be of a higher level.

An Association of Kinésiethérapeutes is of particular importance, as in this way one can assure that the process of continual education, started by the TAs, will be continued in the future, long after they have left.

7.3.b. Field Trips:

Rehabilitation services presently being offered outside Bamako can be split into two groups: those of CRHP supported by the government; those which are purely government funded.
It can be assumed that the situation in those which are government funded, namely Kai and Sikasso, is similar to that in Bamako, but due to time constraints, the authors have not been able to visit these services.
Field trips to Sikasso and Kai have been budgeted for, the aims of which are:
- to assess the difficulties encountered by these services,
- offer support to these decentralised services,
- inform and encourage the therapists there in becoming involved with the association, and using it as a support/advisory service.

8. TECHNICAL ASSISTANCE:

In order to have a lasting impact for rehabilitation services in Mali, within the available time span, it is recommended to identify a minimum of two, well experienced, physical therapists to function as Technical Assistants, over an 18 month period.
These professionals will facilitate skills transfer, increase motivation, ensure appropriate placing of equipment and assist in management in the clinical situation.
The role of the TAs will be varied and demanding, and it is felt that two TAs will be necessary to carry the workload. They can thereby give wide enough coverage in the clinical situation to influence change of habits, whilst working as a team to develop a programme for practical training in the school situation and support for the Association. Where input is required on the construction of locally made equipment, less time will be lost where the workload is shared.

9. PROPOSED PROJECT TIMING:

To realise the recommendations, a project would require a working period of 18 months. It would be hoped to start this as soon as possible, coinciding with newly qualified therapists beginning their clinical work, and the new intake of MK students starting at ESS.

10. RESULTS AT THE END OF THIS PERIOD:

The quality of Physical Therapy (Kinésiethérapie) in Mali will be enhanced by:

- Improved assessment technique / ability to identify problems;
- Improved practical skills / ability to choose appropriate treatment technique;
- A wider variety of treatment techniques;
- The ability to determine when and how to progress/regress treatments;
- Safer technique, especially with regards to electrotherapy;
- Improved clinical management;
- A more functional approach to rehabilitation;

- Better facilities at HGT. ie.ramp;
- Improved equipping of clinical sites;
- Increased motivation amongst the therapists;
- The formation of a functioning Association;
- The establishment of a system for skills transfer between Malian Kinés;
- The facilitation of improved links between Bamako and outlying Rehabilitation services;

- The equipping of ESS;
- The procurement of updated Kinésiethérapie textbooks;
- Improved access to, and therefore use of, available literature.

11. BUDGET

Technical Assistance:	US $.
2 physical therapists 30 hrs per week ea., $20/hr,78 weeks	93,600.

Association:	
Workshop for Mali PT Assoc.	3,000.
Bimonthly meetings/seminars, Kiné Assoc. (6 meetings @ $200 each).	1,200.
Malian Kiné visit to other national programme. (1 Kiné x 2 weeks).	2,500.
Field Trips TAs, to Kai/Sikasso x 2.	2,500.

Equipment: (* priority level, in descending order, eg.*** high).

	Quantity/Price:	Total:	
Treatment tables	6 @ 150	900.	***
Matt tables	2 @ 200	400.	***
Exercise/treatment matts	10 @ 75	750.	***
Exercise bicycle	2 @ 300	600.	**
Wall mirrors	2 @ 250	500.	***
Transfer boards	2 @ 20	40.	**
Wheelchairs	2 @ 300	600.	**
Blackboard	2 @ 50	100.	*
Goniometers	10 @ 20	200.	**
Reflex hammers	2 @ 10	20.	*
Tape measure	50 @ 2	100.	**
Pulley cage with equip	1 @ 600	600.	
Cables/pulleys/weights set	1 @ 200	200.	
Wall stairs	2 @ 200	400.	**
Children's rehab aids	10 @ 50	500.	***
Timer	4 @ 10	40.	**
Crutches	4 @ 30	120.	**
Walker	2 @ 60	120.	**
Vibrator	1 @ 300	300.	
Tool kit	1 @ 200	200.	**
Fans	2 @ 40	80.	***
Sheets - cotton	20 @ 10	200.	**
Sheets - waterproof	5 @ 25	125.	**
Pillows	8 @ 10	80.	*
Positioning cushions	5 @ 30	150.	**
Gymnastic balls	5 @ 50	250.	*
Screens	2 @ 30	60.	
Parallel bars	1 @ 200	200.	***
Set of wall bars	2 @ 265	730.	*
Balance (Wobble) board	5 @ 30	150.	**
Stool	5 @ 30	150.	**
Cold packs	6 @ 10	60.	***
Electric muscle stimulator	1 @ 500	500.	**

Accessories for Infra-red lamp	2 @ 50 1 @ 400	100. ** 400. **
Accessibility of Gabriel Toure PT dept. Remodelling: widen door, ramp.		3,000.***
Training Materials:		
Xerox machine	1 @ 2000	2,000.***
Photocopy Paper	10 @ 20	200.***
Resource library:		300.**
Publication subscriptions		1,000.***
Physical therapy treatment texts		
Maintenance costs:		775.***
TOTAL:		**$120,000.**

APPENDICES

CASE HISTORY - Tenemaken Keita.

Background:

Tenemaken Keita, aged eleven years, was involved in a traffic accident during the events in Bamako in March 1991. He sustained a fracture and complete spinal cord lesion at T 10 level, which has resulted in a flaccid paralysis of his lower abdomen, bowel and bladder, and of his lower limbs.

After initial treatment at Hôpital Gabrielle Touré (HGT) in Bamako, Tenemaken was transferred to a hospital in Libya, where he spent several months. On his return to Bamako, he was once again taken into the care of HGT.

His physical state on return to HGT was poor, in that he had developed large pressure sores over his hips, sacrum and right buttock. It is apparent that no form of physical therapy was initiated in Libya, and his pressure sores are indicative of having had poor nursing care.

The Malian Authorities requested assistance from the American Embassy with regards to Tenemaken's rehabilitation, and after much consideration, it was decided that it would be impractical and inappropriate, to send the child out of the country for rehabilitation. A local alternative was sought.

Mary Denham, an American Physical Therapist, first became involved with the case in April, and was joined by Elaine Leijser, a British Physiotherapist, in early May 1992. Their brief was to assist the Malian Kinésithérapeutes (local equivalent to PTs), in drawing up and implementing a treatment schedule for Tenemaken's rehabilitation.

Initial Observation:

Happy, alert child. Tenemaken shares a three bedded ward with two other patients, but is the only long-term case.
He is usually to be found in a semi reclined position ie. supine, with the back of the bed raised slightly, and supporting himself on his elbows. The blanket on which he lies is often found to be soiled, due to his double incontinence.
He is often alone, with no family in attendance, his basic needs being cared for by the families of the other patients.

General Examination:

1) Pressure sores
- Right Ischial Tuberosity, approximately. 8cm diameter and 2mm. depth.
- Left medial malleolus.
- Left lateral malleolus.

Aggravated by his habitual posture, unhygienic surrounds and poor nursing care.

2) Flaccid paralysis of bowel and bladder. He is not catheterised, and is using no rectal or bladder emptying stimulation methods. He keeps a bottle in place to catch urine.

3) Hyperkyphotic thoracic spine - due to denervation of his lower trunk muscles, and aggravated by his habitual posture.

4) Flaccid paralysis of lower limbs, with sensory loss.

5) Oedematous feet and rigidity of ankle joints, due to lack of either active or passive movements.

Functional abilities:

Independence in bed
- can roll from supine to prone and vice versa, but needs assistance to position feet.
- can move from supine to long sitting, without aid.
- can maintain long sitting position propping with arms.
- needs only minimal aid to hold long sitting position without propping.

Sitting
- needs moderate assistance to sit over the edge of the bed, from either lying or long sitting position.
- requires full assistance to maintain sitting over edge of bed.

Transfers
- is completely dependent in all transfers ie. bed to chair etc.

Toileting
- is completely dependent in toileting and hygiene procedures.

Social background:

Tenemaken's home is in Kati village, 15km. north-east of Bamako. Kati is connected to Bamako by an asphalt road, however transportation can be difficult, and is certainly time consuming and costly.
Initially, Tenemaken's mother came to HGT to look after his daily needs. However, her visits have become less frequent during the last few months.

There is a special Committee responsible for the care of those 4 or 5 patients who remain hospitalised, due to the events of March 1991. The Committee, with government funding, assists in practical ways eg. the provision of meals.

Schooling is being provided for in the hospital setting.

Major problems:

a) The major set back to Tenemaken's rehabilitation, are his pressure sores. These are potentially life threatening, and all effort must be made in healing them.
The first requirement is that no further pressure be put on the ulcers. This has been extremely difficult to enforce as Tenemaken's parents are rarely there to supervise him, and the nursing staff do not seem to see positioning of the patient as part of their role. Perhaps they do not fully understand the need for pressure care, and the consequences of lack of it. The Kinésiethérapie staff too, were initially, equally unconcerned. Due to the position of his sores, it is virtually impossible to work on Tenemaken's balance, to teach him how to transfer, pressure care in sitting, and how to use a chair - the functional activities he most needs.

b) Tenemaken does not seem to be particularly motivated towards his rehabilitation. This may be for one or more of several reasons:
- He does not seem to have accepted his prognosis ie, that he will not walk again, although Professor Abdou Touré states that he has been told.
- His parents are unable to come regularly as they have to travel from Kati, therefore he has no strong adult influence, or personal relationships, that can motivate him. The nursing staff are unable to spend a great deal of time with him during their working hours.
- He enjoys a lot of "hero attention" due to the cause of his injury eg. the nurses jokingly call him ATT.
- Tenemaken is a classic case of a child who has become institutionalised.
- Finally, he is an eleven year old child, who can not be expected to fully understand the severity of, and the consequences of, his injury and subsequent disability.

c) It must be acknowledged that the skills of Kinésithérapie staff, with regards to treatment of paraplegia, are lacking. They did not initially understand the seriousness of pressure sores, how to avoid them, and how to prevent their worsening.
They did not understand the pathology, were unaware of the level of injury, and therefore of the area paralysed eg. Tenemaken was being given abdominal exercises to do, and being scolded when he could not perform them.

The Kinés were concerned at the rotated position of Tenemaken's legs, and so made plaster casts to hold them in a neutral position. Tenemaken's malleolar pressure sores are a direct result of this misguided action.
They were not performing passive exercises to maintain joint mobility and blood circulation, the latter of which would assist in the promotion of tissue healing.

Rehabilitation plan:

Immediate Goals
- Promote healing of pressure sores
- Strengthen upper trunk and limbs.
- Maintain mobility in lower limbs.
- Maintain and encourage circulation in lower limbs.
- Educate the family as to the importance of encouraging Tenemaken's independence in self care and mobility.

Eventual Goals
- Good standard of self pressure care.
- Self passive movement of lower limbs.
- Wheelchair independence.
- Independence in activities of daily living (ADL).

Approach:

Regular visits, to the ward, providing encouragement and gradual education of the Kiné staff in the general and physio-therapeutic needs of Tenemaken. Eventually ensuring that they are competent in:
- Pressure care;
- Positioning;
- Bedside exercises, passive, active and active resisted;
- Techniques of assisting transfers;
- The selection and fitting of appropriate chairs, mobility aids and equipment, for spinal cord injuries.

Equipment provided:

* A prone lying, self-propelling wheelchair, was urgently required, and was commissioned by USAID therapists, from INRFPHP, in Quartier Mali. This encourages Tenemaken to lie on his front, and thereby allows healing of his pressure sores, whilst relieving flexion stress to his thoracic spine.
Propelling the "wheelchair" requires that Tenemaken uses his upper limbs, and the weight of his body provides a resistance. He is therefore doing functional active-resisted exercise, helping to build up his trunk and upper limb strength, quite [illegible] it. It also offers Tenemaken the possibility [illegible] that this

The chair was completed and delivered by early June 1992. It has an adjustable chest support, an opening and rack to hold a urine pot, and is supplied with two safety belts, to prevent his falling off. It was delivered to Tenemaken with advice on steering, the use of brakes, positioning and use of safety belts, and hygiene. Both he and his mother, who was in attendance, were delighted.

* Adequate dressings and bandages were provided to cover approximately a 2 week period. As the healing of pressure sores is so basic to Tenemaken's rehabilitation needs, this was felt justified.

* Hand held weights, to strengthen upper trunk and limbs.

* A foot rest, made simply from wood, to assist balance in sitting.

* A temporary wooden ramp, to allow access to and from the ward.

* Push-up blocks, to assist in the learning of pressure care.

Future equipment needs:

Tenemaken's future needs include the provision of a sitting wheelchair/tricycle, adapted to support his trunk, and allow full independence. He will need one or two pressure cushions, and at least one transfer board that he can carry with him.

To enable access into the Kinésiethérapie room where his therapy can be progressed, the door needs to be widened, and a ramp built. A floor mat is required to enable training in functional movements, eg. rolling, transferring floor to chair.

The future:

At the time of writing this report, Tenemaken is beginning to be more cooperative, in that he is regularly to be found lying prone, and with the bed flat. His pressure areas continue to be a problem, but are for now, being dressed daily. His mother is again visiting, and seems responsive to advice, and motivated towards helping her son.

Tenemaken is enjoying the use of his prone-lying wheelchair, and it is hoped that this will aid his motivation towards being more independent. The Association of Physically Handicapped have suggested that one of their paraplegic members could visit Tenemaken informally in the Hospital, to show him that there are others like him, and that they are able to lead full and active lives.

At one point, the possibility of future transferral to Kati Hospital, as a "stepping stone" to reinsertion into the community, was discussed with Prof. Touré. It was suggested that

follow up by the special Committee would prove difficult were he moved, and when a subsequent visit was made to Kati, it was obvious that this is not a realistic option. There are even fewer rehabilitation facilities in Kati than in HGT.
It is likely that Tenemaken will remain hospitalised for some time, and it is hoped that he will receive enough encouragement and assistance to become once again, an active, independent, member of the community.

GLOSSARY OF TERMS:

Medial	- inside aspect.
Lateral	- outside aspect.
Supine	- lying on one's back.
Prone	- lying face down.
Malleolus	- ankle bone.
Ischial tuberosity	- bone one "sits on".
Flaccid	- floppy, decreased muscle tension.
Oedematous	- swollen.
Long sitting	- Sitting with legs extended out infront.
Kyphosis	- spinal deformity, curving backwards.

Hôpital Gabrielle Touré.

Contacts : Dr.Abdou Touré - Traumatologue.
Mme. Konaté - Kinésiethérapeute.

Visited on a regular basis as this is where Tenemaken Keita is hospitalised.

Hôpital Gabrielle Touré (HGT) is situated in the Centre of Bamako, and is the main referral point for orthopaedic cases. Established in the 1930's it is a 500 bedded hospital funded by the Government. The Physical Therapy service was introduced in 1986, and is presently staffed by 4 Kinés.

Dr. Touré is an Orthopaedic Surgeon, he is Director of the Department of Traumatology and the Physical Therapy Department at HGT, and is Director and lecturer at the Physical Therapy School situated in the Ecole Secondaire de la Santé.

The Physical Therapy Department has expanded in the past year, both in staffing (from 3 to 4), and in size and accessability of the treatment room. The outpatient caseload is predominantly adult with conditions of orthopaedic origin. Children are sometimes seen, but where their condition is of neurological origin, they are referred on to CRHP.

Conditions being treated:
Mainly adults, Orthopaedic / trauma cases.
Head injuries.
Hemiplegia.
Paraplegia.
Gynaecological / maternity.

Statistics:
Show that relatively few treatment sessions are being provided. Out patient conditions are subdivided into upper limb, lower limb and back problems, the ratio being almost 50:50 upper to lower, with only very few back patients being treated. The ratio of male to female is 2.5:1.

1991 Out-patient Statistics: 104 individuals.
281 treatments.

ie. 23.5 treatments / month.

Accurate in-patient statistics are not available, but on estimation:
216 treatments / month.

Treatment Fee:
Each patient coming for therapy pays a fee of 1,000FCFA at the entrance to the Hospital. This goes into general hospital funds and is not used specifically for the department.

Treatment Room:
The department is situated behind the orthopaedic outpatient clinic and comprises 1 small treatment room (4m X 6m), with a smaller room off it, used by the therapists for changing etc. It has good access (an external door to each of the rooms), though lacks adaptation, eg. ramp for wheelchair. It is light and airy, the treatment room being air conditioned. A sink with running water is situated alongside.

List of Existing Equipment:

Desk	- 2.
Chair	- 4.
Treatment couch	- 1.
Trolley (large)	- 1.
Trolley (small)	- 1.
Step	- 1.
Medicine ball	- 2(small).
Hand weights	- 2.

Electrical:
Infra-red lamp - 1.
Faradic stimulator - 1(working, but lacks necessary accessories)

Needs:

Accessories for Faradic stimulator ie. electrodes, leads, sponges and strappings.
Low mat table.
Exercise mat.
Exercise bicycle.
Wall mirror.
Wheel chair (to bring pats. to dept).
Transfer board.
Walking frame.
Positioning cushions/wedges.
Widening of door PT dept.
Ramp at door PT dept.

Staff list:

Mme. Konaté	- Kinésiethérapeute (trained Bamako).
Mme. Diarra	- Kiné (trained Bamako).
Mme. Keitané	- Kiné.
M. Tangara	- Kiné (trained Tunisia).

Perceived needs:
Further training;
Equipment.

Hôpital Point G.

Contacts: Dr. Zakaria Maiga - Assistant Director.
M. Siné Konaté - Chef de Kinésiethérapie.
Mme. Awa Diarra - Kiné.

Point G Hospital is situated on the hill over looking Bamako, 6 km. to the north of the city. Although there is a tarred road, the hill on which the hospital is built is steep and transportation is a problem for both staff and patients.

Initially established as a hospital for infectious diseases, it is the largest hospital in Mali, with capacity or 650 beds. The wards are in pavilions, each being for a different speciality. Some are two storeyed, with undoubted problems of access for disabled eg. a paraplegic on the first floor of the neurology pavilion.

The Kinésietherapie section was opened in 1988 and two Kinés work in the hospital. They have an office, but as yet no treatment room, therefore all treatments are on the wards, and here the emphasis is more on intensive rehabilitation ie. each Kiné patient is treated 3 or 4 times per day.

A formal request has been made for the provision of a treatment room, as well as for an increase in staff.

Conditions being treated:
Neurological, eg. hemiplegia, paraplegia due to cord compression or post meningitis. Back pain.

Statistics:
6 - 10 patients are treated daily, each 3 times per day. ie. between 18 and 30 treatment sessions per day.

Treatment Fee:
All are in-patients and are therefore treated free of charge.

Equipment:
Apart from basic office equipment, ie desk and chairs, nil.

Needs:
Treatment room and basic equipment.

Staff List:
M.Siné Konaté - Kinésiethérapeute.
Mme.Awa Diarra - Kiné.

Perceived needs:
Further training / seminars.
Visits to rehabilitation programmes in other countries.
[illegible]thérapeutes.

Regular update by means of Physical therapy journals from other countries.

PMI Centrale:
Centre de Rééducation Fonctionelle et Psychomotrice.
Soundiata.

Contacts: Dr. Sissoko - Medecin Chef.
Cheik Omar Kane - Chef de Kinésiethérapie.

Visited briefly for introductions 25.04.92 and 09.05.92, and again for longer period of observation and discussion on 13.05.92.

This is the major referral centre for children in Mali. The department was opened in 1967 in response to rehabilitation needs post polio epidemic, and was the first established physical therapy department in Mali. The case load has since adapted to changing needs, and the Centre now has a heavy case load of adult outpatients.

Conditions being treated:
Classification of conditions is confusing. Cerebral Palsy, Hemiplegia, Meningitis and Delay in walking, are all classifications used, and are a mixture of symptoms and origin. To illustrate this, a child who has had meningitis may be left with a cerebral palsy, the symptoms of which can be a hemiplegia and a delay in walking.

Statistics:
Figures provided by the Centre for Mon. 17.05.92 showed 68 children registered that day.
The largest group is Sciatic Nerve Paralysis - 27, followed by Polio - 7, Erb's Palsy - 6 and Hemiplegia - 5.
Children are also presenting with Arthritic and infective conditions, and fractures.

The Centre is on ground level and has 6 rooms available ie. 5 treatment rooms and one administration. It is staffed by 4 Kinésiethérapeutes, and 1 Gymnaste Medicale, plus 3 Aide Soignantes and 1 Physical Education teacher (on secondment), who work under supervision of the 5 aforementioned. There is also 1 general assistant who is not involved in patient treatment.

Treatment Fee:
1,000FCFA/treatment, is paid into the general funds for the Centre, and the Kiné department then has to request any funds required. Often requests are turned down, but when accepted, they are for repairs. No new equipment has been bought with this money.
Further funding comes from the Institut National de Prevoyance Social (INPS), in the sum of 500,000FCFA / year. Again, this amount goes towards maintenance costs.

Treatment Rooms:

In general the Centre has been well equipped as regards to basic equipment and electrotherapy machines. However, some of these machines lie dormant as there is no one capable of repairing them when they break down, much of the equipment could do with maintenance, and some simple basic equipment is missing.
Space does not pose a problem at the Centre, and each treatment room has a sink with running water, a tiled working surface along each wall, and a ceiling fan. One of the rooms has an air conditioner.

List of existing equipment:

Desk	- 5.
Chair	- 18 (1 being broken).
Cupboard	- 2.
Treatment couch	- 12.
Suspension frame	- 1.
Exercise mat	- 2.
Mirror (full length)	- 2.
Parallel bars	- 4 sets.
Exercise bicycle	- 6 (variety).
Wall bars	- 3 sets (all in one room).
Refrigerator	- 1 small.
Stool	- 6.
Table	- 2 (high,elbow tables).
Step	- 2.
Trolley	- 1.
Medicine ball	- 1.
Skipping rope	- 1.

Assorted cushions, rolls and wedges.
Assorted weights / sand bags.
Assorted slings and belts.

Electrical:

Infra-red lamps	- 6 (1 being broken).
Faradic stimulator	- 2 (1 being broken).
Galvanic high frequency stimulator	- 1.
Vibrator	- 1.

Needs:

- Maintenance.
- Slings and pulleys.
- Wobble board.
- Ice packs.
- Low treatment couch, double width.
- Walking frames.
- Dust covers for faradic and galvanic stimulators.

Staff list:

M. Cheik Omar Kane	- Kinésiethérapeute (trained France).
Mme. Touré	- Kiné.(trained Jugoslavia).
M. Kamisoko	- Kiné.(trained Tunisia).
Mme. Coulibaly	- Kiné.
Mme. Scego	- Gymnaste Medicale (trained Czeceslovakia).
M. Dembely	- Aide Soignant.
M. Karamogo	- AS.
Mme. Francoise	- AS.
M. Traoré	- Professeur d'Education Physique,(trained Institut National de Sport, Bamako).
M. Yacouba Koné	- Mainouvre.

Perceived needs:

Further training post qualification;
Equipment;
Reference books;
Professional association;
Management / organisational skills.

KATI HOSPITAL

Contacts: Dr. Mamadou Traoré - Directeur, Traumatologue.
M. Alassane Koné - Chef de Kinésiethérapie.
M. Fodé Diakité - Kiné.

Kati village, the Regional Centre of Kati, is situated 15km. north-east of Bamako. It is connected to the city by an asphalt road, however access can prove difficult due to the steep hill going north out of the city.

The Hospital lies at the entrance of the village. It has the capacity for 70 inpatients, and is a centre for the referral of orthopaedic/trauma cases. Medical, surgical and some gynaecological conditions are also catered for at the hospital, and the Chinese are also working there using acupuncture techniques.

The Kiné service was established in 1985 and there are 2 Kinés working at the hospital. Their work is ward based, as they do not have a designated room in which to practise. The Kinés find this frustrating as they have to refer out-patients on to Bamako for treatment by their colleagues, when they themselves possess the treatment skills, but have neither the facilities nor the equipment. They also lack the possibility of bringing in-patients to rehabilitation off the ward.
From the patients point of view, it is not only tiring and time consuming to commute to Bamako, but rehabilitation becomes expensive due to travel costs.
The journey by taxi would cost 280CFA, and by bashé 120CFA, return. As each treatment session costs 1000CFA, the total is 1120 - 1280 CFA per session.

The Kinés have a good rapport with the medical staff, and assist in consultations where they would see on average 15 patients per day, 7 or 8 of whom would require to be shown exercises.
They are also responsible for all inpatient therapy, and by accompanying the medical staff on ward rounds, cases are easily referred.

Conditions being treated:
Orthopaedic, mostly in traction or POP. Fractured limbs, fractured ribs.
Paraplegia.

Treatment fee:
There is no fee for treatment of in-patients.

Existing Equipment:
Very little, some crutches and a few imported wheelchairs, are available for use by inpatients. Otherwise the patient is measured for crutches by the Kiné, and a local carpenter has to make them up.

Sand bags can be made using Tubiton bandage, as available, for individual patients.

Needs:
(Identified by Kinés, and in order of priority).
1. Treatment room.
2. Treatment couch.
3. Faradic stimulation.
4. Static bicycle.
5. Pulley system.
6. Suspension frame and accessories.
7. Weights.
8. Infra-red lamp.
9. Ultra-sound machine.

Staff list:
M. Alassané Koné - Chef de Kiné (Bamako trained).
M. Fodé Diakité - Kiné (Bamako trained).

Perceived needs:
Inservice training.
Visits to rehabilitation programmes in other countries.
Exchange within the existing group of Kinés.
Recognition of the profession.
Formation of an Association.
Publications / texts.

Centre de Réadaption des Handicappé Physique - CRHP:

Contacts: M. Goulou Moussa Traoré - Directeur General.
M. Seydou Sidibe - Directeur Adjoint.
Mme.Kadiatou G. Keita - Chef de Kinésiethérapie.
M. Clement - Physiotherapeute, CECI.

The Centre, situated in Djikoroni, was opened in response to a polio epidemic in the 60's. It was built by the French Cooperantes, and later handed over to the Ministry of Health. It is run jointly by the MoH and the Association Malienne des Handicappé Physiques, the President of which is also Director of the Centre.
The CRHP is a day centre specifically designed for the schooling and rehabilitation of 3 to 8 year olds. After the age of eight the children go on to normal state primary school. 165 children attend the centre, and there are 4 classrooms, each with a teacher.
Adults, with a wide variety of conditions, are also now treated at the Centre. Dr. Sory Traoré consults at both the Institut and CRHP, and sees a mixture of cases, not all of whom are long term disabled persons, and not all of whom are in need of PT.

There is a workshop for repair and maintenance of callipers and prostheses, which backs up the INRFPHP situated over the bridge. Due to the opening of the new bridge in 1992, patients have a more direct route between the CRHP and the INRFPHP.

Organisations such as Plan International and World Vision provide individual child sponsorship which is used to assist in the costs of orthopaedic appliances.
In the case of adults who require financial aid, there case can be put before and will be considered by the social services.

Paediatric conditions treated (in descending order):
Injection injuries (arguably polio); Arthritic Hip ; Club foot; Brachial plexus lesion; Cerebral Palsy; Others incl. polio.

Adult conditions treated: Arthritic joints; Hemiplegia; Fractures and post trauma; Others incl. back pain, paraplegia, gunshot wounds, burns.

Statistics:
No accurate statistics are available, but the Senior therapist estimated that as many as 48 children and 30 adults are treated per day. It is felt that this is a generous estimation.

Treatment fee: 1,000FCFA / adult treatment.
Children free of charge.

Treatment Room:
All on the ground floor, there are 3 treatment rooms: 2 identical rooms for children, and one for adults. The rooms are large and

it is possible to treat several patients at the same time. At a glance they seem to be well equipped, but certainly some of the equipment is in need of maintenance or repair.
The children's treatment rooms are modelled on the adult rooms ie. equipped with electro-therapy machines, high treatment couches, exercise bikes etc. There are no toys or other visual/ audio stimulation available, no mats or low treatment couches.

The emphasis is very much on electrotherapy, but staff complained that although their machines are working, they are not working well. This is subjective and difficult to assess without specialised evaluation. There is an electrician at the Stadium Omnisport who has done reparations in the past, but it is doubtful as to whether he can test machinery effectively to evaluate their therapeutic effect.

List of Existing Equipment:

Adult treatment room

Treatment couch - 6.
Screens - 4 +
Set of steps - 1.
Parallel bars - 1 set.
Mirror - 1.
Wall bars - 4 sets.
Static bicycle - 3.
Small step - 1.
Suspension frame - 1.
Accessories " " - assorted
Gympac 2500,(weights couch) - 1 (broken).
Cushions - assorted.
Sheets.

Electrical:
Ultra sound - 2.
Infra-red lamp - 3.
Muscle stimulator - 3 (old, one not working).

Needs:
Maintenance of existing equipment.

Childrens' treatment rooms -

Desk - 2.
Chairs - 2.
Treatment couches - 10.
Stools (high) - 4.
Trolley - 1.
Wall bars - 10 sets.
Suspension frame - 2.
Accessories " " - assorted.
Steps - 2.

Static bicycles - 4.
Weighing scales - 1 set.
Cushions - assorted.
Hand weights - assorted.
Walking frame (child's) - 1.
Chair (child's) - 1.
Sand bags, ropes, slings - assorted.

Electrical:
Infra-red lamp - 2 (1 needs repair).
Faradic stimulator - 4.
Ultrasound - 1.
Hydrotherapy pool in the grounds of the Centre is empty as is in need of repair. (Water leaking - ? Grouting).

Needs:
Maintenance.
Repair of Hydrotherapy pool.
Other equipment such as floor mats, toy etc... could be provided, but more than anything a change of approach is required before these would be of much use.

Staff list:

Mme. Keita	- Kinésiethérapeute.
Mme. Keita	- Kiné.
Mme. Coulibaly	- Kiné.
Mme. Cissoko	- Kiné.
Mme. Cissé	- Kiné.
Mme. Kanté	- Kiné.
Mme. Sanagho	- Kiné.
Mlle. Sakalé	- Kiné.
M. Bâ	- Kiné.
M. Coulibally	- Kiné.
M. Sarvié	- Kiné.
M. Koné	- Kiné.
M. Clement	- Physiotherapeute (CECI).

Perceived needs:
Electro-therapy equipment;
Association.

The CECI volunteer, stated that one of the greatest needs is for improved management skills.
He presented a copy of a project proposal aimed at the expansion of the PT services offered by CRHP in Bamako, and supervision of the service being offered in Segou. It was requested that it be submitted to USAID.

Association Malienne de Lutte contra les Déficiences Mentales chez l'Enfant (AMALDEME) - Centre Medico-Psycho Educatif.

Contacts: Mme. Kadiatou Sanogho - Directrice.
Mme. Asseitou Doumbia - Directrice Adjoint / Kinésiethérapeute.
Mme. Bintu Cisse - Kinésiethérapeute.

AMALDEME is a Malian non-profit making association founded in 1984 on the initiative of a mother of mentally disabled children. The overall objectives of AMALDEME are the prevention of mental handicap by early detection and early intervention; early childhood stimulation in order to develop fully the intellectual and physical potentials of the child; awareness raising within the general public; and the training of health personnel in effective care of the mentally disabled child.

The Centre Medico-Psycho Educatif was opened in 1989, and is a centre for referral of mentally disabled children in Mali. It also occasionally receives referrals from neighbouring countries in the West Africa Region. The Centre is situated on the outskirts of Lafiabougou, in Commune IV Bamako. Access is difficult for mothers bringing children, as there is a one and a half kilometre walk on a dirt track, between the Centre and the bashé stop.

AMALDEME has a multidisciplinary staff providing a wide range of inputs. The team comprises: Special Education, Psychology, Psychomotor therapy, Nursing, Social Work, Occupational, Speech and Physio therapies, the level of professional capabilities of the personnel varying to some degree.

Conditions being Treated:
Cerebral Palsy - post infection, birth injury.
Congenital malformations - eg. microcephaly.
Developmental delay - often with associated malnutrition.

Statistics:
More than 500 children have registered with AMALDEME, since the opening of the Centre.
The Kinésiethérapeute presently has around 30 children registered for therapy, although somewhat less than that number actually attend.

Treatment fee:
1,000 FCFA per child, per month. This fee covers multiple visits for therapy treatment / education.

Funds come from various quarters and for various projects eg. UNICEF is funding the establishment of vocational workshops for teenagers, the EEC / EFD and Dutch Embassy small project funds, support different aspects of the work, World Vision offer child [illegible] etc.

The Malian government pays the salaries of personnel.

Treatment room:
In September 1991, the Kinésiethérapie section was moved from a small room in the main building to a spacious, traditionally styled, out building, with running water and electricity.
In March '92, the Dutch Embassy agreed to funding for painting and flooring the room, and for the provision of appropriate, locally made wooden mobility aids, adapted seating and toys. This project is presently being implemented.

List of existing Equipment:

Peto chair - 2.
Chair and table - 1 set.
Table - 1.
Corner chair - 1.
"Horse" walking aid - 1.
Box walking aid - 2.
Balance board - 1.
Wall bars - 1 set.
Parallel bars - 1.
Mirror - 2.
Standing board - 1.
Assorted wedges and foam rolls.

Toys:
Activity board - 1.
"Merry-go-round" - 1.
Posting box - 1.
Activity frame - 1.
Shape boards - 3.
Hoop set - 1.

Music:
Xylophone - 1.
Drum - 1.
Maracas - 1.

Playground materials (for balance and coordination, walking etc.).

Needs:
The basic requirements for paediatric therapeutic activities are present.

Staff list:
Mme. Bintu Cisse - Kinésiethérapeute.

AMALDEME has had many problems with staffing since the Centre opened. A minor problem is undoubtedly that of transportation, but by far the biggest problem has been lack of skills on the part of the Kinés who have worked there.
The therapists are aware of their lack of competence with regards

to the treatment of sensory-motor problems, it is not an area covered in any depth in their training at ESS. Compounding this are the intellectual disabilities of the children. The therapists feel inexperienced and unable to cope. This has resulted in a regular turn over of staff, since the opening of the Centre.

In an effort to improve this situation, a British volunteer agency was approached in 1991, and has agreed to assist by the provision of a Physiotherapist/volunteer, experienced in the treatment of Cerebral Palsy (CP). It is hoped that he/she will arrive in the autumn of 1992, and stay for a two year period.

Perceived needs:

Training post-qualification, in updated therapeutic techniques.

eg. there are kinés working since the 1960s who have had no training input since their graduation. The point was made that health personnel in other fields such as midwifery, have regular training sessions, which not only upgrade their skills, but act to motivate them.

Training for Kiné students in the treatment of CP.

Formation of a Society or Association of Kinésiethérapeutes, and the writing of a constitution and code of ethics.

It was felt that this would be easier now, post the Moussa Traoré Regime, as the people are have more freedom to group, there is a better general atmosphere and motivation due to this and to regular salaries.

INSTITUT MARCHOUX
Organisation de Coordination et Cooperation pour la Lutte contra les Grandes Endemies.

Contacts: Dr.Pierre Bobin - Director.
M. Idrussu Touré - Chef de Kinésiethérapie.
Mlle. Dindira Touré - Kiné.

The Institute is situated in Quartier Djikeroni, going west out of the city, along the Niger. The Institute was opened in 1935, and is a specialist Centre for the referral and treatment of leprosy patients, for research into the disease, and for the training of health professionals with regards to leprosy.

Mali is a member country of a Federation which includes France and eight neighbouring West African countries, namely, Senegal, Niger, Mauritania, Benin, Côte d'Ivoire, Chad and Togo. Guinea Conakry is also included, but for observation purposes.
The Raoul Follereau Foundation is based in France, and provides most of the funding for the Institute.
The Ministry of Health pays the salaries of Malian health personnel.

Inpatient facilities consist of 61 beds for surgery cases, a Rehabilitation Centre, Pharmacy and various clinics, and the nearby Village Marchoux, which acts as a host village for patients under observation. Primary Health Care is part of the Institute's programme.

The Rehabilitation Department consists of 3 sections: Kinésiethérapie, Health Care, and Workshop and there is also a Social Worker based there. The Workshop makes orthopaedic appliances such as prostheses, and also protective footwear.

The Kiné department was established in August 1990, so is relatively new, although a service has been offered over many years, but with a stronger emphasis on Occupational Therapy skills.

Treatment Room:
The treatment room has been purpose built, has good access and is well equipped, sink with running water, ceiling fans etc.
A small, fully equipped office is to the side.

Conditions being treated:
Leprosy - peripheral nerve lesions;
Occasionally orthopaedic conditions.

Existing equipment:
Treatment couch - 3.
Parallel bars - 1.
Mirror - 1.

Static bicycle - 1.
Wheelchair - 1.
X-Ray viewer - 1.
Stool - 3.
Chair - 4.
Bench - 4.
Cupboards - 3(contents not viewed).

Electrical:
Wax bath.

Staff list:
M. Idrissu Touré - Chef de Kiné / teacher at ESS.
Mlle. Dindira Touré.

Both studied MK in Bamako, M. Touré the 4 year curriculum, and then worked for some years in the various Centres in Bamako, before specialising in the treatment of leprosy. Prior to working at the Institute they had an initial training of 45 days in Dakar.
Patient education as to care of affected areas and prevention of injury is an integral part of the rehab service.

Perceived needs:
Improve motivation by improving working conditions and salary.
Recognition and promotion of the profession.
Post qualification training.
Association of Kinésiethérapeutes.
Attract quality staffing to the profession.

ECOLE SECONDAIRE DE LA SANTE (ESS), CENTRE DE SPECIALISATION DES TECHNIQUES DE LA SANTE - School of "Masso-Kinésiethérapie".

Contacts: Prof. Abdou Touré - Directeur de L'Ecole de Masso-Kinésiethérapie.
Mme. Josephine Keita - Directrice de la Centre.
Mme Scego - Gymnaste Medicale/Professeur.

Situated in Quartier Dar Es Salaam, the school was established in 1984, and offers courses in 6 different health/paramedical fields, including a two year post nursing course in Masso-kinésiethérapie (MK).
There is a full time administrative staff, but teaching staff are all on a part time basis. There are 24 lecturers, 16 of whom are involved in teaching on the MK course.

Approximately 40 Kinés have been trained since the school opened in 1984.

At any one time, there are a total of 10 students in the school, 5 in each year. All are mature students, having previously trained and worked as either nurses, midwives or laboratory technicians. After completion of their initial studies, they are required to work in that field for a minimum of 3 years before being allowed to apply for training in MK.
Entrance to the course is based on examination of their general medical knowledge. If accepted, they are readmitted to the ESS School of MK for two more years of specialised education. The final examination is written, oral and practical.

Subjects taught can be divided into theoretical and practical, but the greater part is theoretical.
Students spend 4 mornings per week (ie.12 hours) on clinical placement, and afternoons are spent in the school. They have 3 months for their summer holidays, but 45 days must be spent on a placement of their choice.

The syllabus contains:

Theory	Hours / year.
Anatomy	- 100 hrs.
Orthopaedics/Trauma	- 100 hrs.
Neurology	- 50 hrs.
Surgery	- 25 hrs.
Anatomy (of brain)	- 25 hrs.
Physiology	- 20 hrs.
Psychology	- 20 hrs.
Cardiology	- 10 hrs.
Respiratory medicine	- 10 hrs.
Dermatology	- 10 hrs.
Hydrotherapy	- 10 hrs.
Ethics	- 10 hrs.
General Medicine	- 5 hrs.

Total: = 395 hrs.

Practical Hours / year.

Kinésiethérapie practise - 85 hrs.
Physical Education - 50 hrs.
Kiné - active and massage- 135 hrs.

Total = 270 hrs.

NB. These are not purely practical sessions, much is in lecture form.

TOTAL NO. OF TEACHING HOURS/YEAR: 665.

On questioning students and qualified Kinés, it is clear that the greater part of their practical skills are learned whilst on clinical placement. The head Kiné at each clinic is ultimately responsible for the students training, but it is not clearly organised.
Students learn practical techniques by observation. With the limited facilities for practical teaching the lecturers can at most demonstrate on one student whilst the others look on.

Equipment/Training materials:
There are 3 small rooms available for the teaching of MK, two classrooms, and one gym. The buildings are in good condition, and each room has a ceiling fan. However, the school is severely lacking in training materials and equipment.
Each class has 5 tables and chairs, a blackboard, and one also has a treatment couch. There is one articulated skeleton.
The gym is basically an empty room with linoleum floor, and has 2 broken gym benches. There are 4 medicine balls and some assorted hand weights.

The ESS has a secretary who has a typewriter, but all notes are copied down from the blackboard by the students themselves. There are no teaching materials such as overhead projectors, slide projectors, no copying facilities etc.

The library is situated in the Director's office, and on quick assessment seems to be divided equally between medical and surgical texts, and books on kinésiethérapie and massage. It is not extensive. The students have access to these books, but on looking through the records of loans, it appears that they very rarely use this service ie. 3 books loaned by 2 individuals to date in 1992.

List of Existing text books:
1) Kinésiethérapie
1. Principes (1983).
2. Membre Inferieure.
3. Membre Superieure (1986).

3) Massage, Kinésiethérapie et Rééducation.
   Parts 2, 3 and 4.
4) Rééducation Neuromusculaire de l'Adulte Hemiplegique.
5) Petit Appareillage de Marche (1972).
6) Rééducation de l'Appareil Locomoteur (1972).
7) Les Appareils de Marche dans les Infirmités Neurologique (1966).
8) Traitement Physique des Rheumatismes (1971).

Brochures:
A few copies of the French Kiné Society Journal, dating from 1970's and early 80's.

Needs:
Teaching materials
- Text books.
- Monthly Journal ? French PT Society.
- Xerox machine (to make texts more accessible).
- Photocopying paper.

Equipment for class rooms
- Treatment couches x 3.
- Pillows x 3.
- Sheets x 9.
- Pillow cases x 9.
- Towels x 5.
- Infra-red lamp x 1.
- Oil/talcum powder, for massage.

(ie. turn the larger classroom into a practical teaching room).

Equipment for Gym
- Floor mats x 6.
- Wall bars x 2 sets.
- Mirror x 1 full length.
- Stools x 6.
- Treatment couch x 1.
- Skipping ropes x 6.
- Wobble board x 3.
- Plastic football x 1.

INSTITUT NATIONAL POUR LA READAPTION ET LA FORMATION PROFESSIONELLE DES HANDICAPES PHYSIQUE (INRFPHP):

Contacts:	Mme. Mariatou K. Tall	- Assistant Director, and Accountant.
	M. Yacouba Keita	- Accountant.
	M. Talfi Maiga	- Head of Workshop.

The Institute is situated in Quartier Mali, a few minutes walk from the second exit from the new bridge. Since the opening of the bridge in March 1992, accessibility for disabled people being referred from the therapy centres in the city, has been much easier. Previously it was difficult to reach.

The case of Tenemaken Keita was discussed with M. Maiga who is a prosthetist and specialist in adaptive equipment and transportation, including wheelchairs and tricycles. The consensus was that a prone lying wheelchair would be most appropriate for Tenemakan at this stage of his rehabilitation, and a costing estimate was obtained from the accountant.

On the subsequent visit to the Institute, discussions were held with Mme. Mariatou K. Tall, Assistant Director and Accountant, and M. Yacouba Keita, the Accountant, both members of and employees of the Association Malienne des Handicapés Physiques (AMPH).

The Centre was set up by the Association in 1985, and staff are salaried by both the Assoc. and Govt. ie. of the 23 staff members, 18 are Assoc. employees, and 5 are Govt. employees.

There are no Kinésiethérapeutes presently working at INRFPHP. Initial gait training is given by the technicians, and patients are referred on to CRHP if necessary.

The 4 technical staff have had training outside the country ie:
M. Maiga - 6 months in Brasil,
Sylvan - Brasil,
Baba -Lomé and Dakar,
Clement - Lomé.
Some have also attended workshops in Lomé and Dakar.

The sister organisation to CRHP and INRFPHP in Segou, has three PTs.

The workshop in Gao, has two PTs, but is barely functional as has difficulty in funding materials for orthopaedic appliances.

Niono - Centre Soin de Reeducation Primaire (SRP), has a community based rehabilitation programme run by a missionary, and one state employed Kiné. It is unclear whether or not they work

The CECI Physiotherapist/volunteer (who works at both the Institute and CRHP), has presented a project proposal covering the re-equipping of the CRHP Kiné section, the building and equipping of a Rehabilitation Centre at INRFPHP, and the purchase and running costs of a vehicle to enable visits between all the centres of AMPH.
The Association has approached the MoH with regards to the staffing of the Kiné service at the Institute. No definite decision has been reached, but it would then provide a rehabilitation service "over the river".

Equipment:
The workshop has several machines, all but one of which are working (saw blade broken and have not been able to replace it). The standard of training is obviously good, and motivation appears high.

Funding:
There are problems with funding the costs as many materials are imported ie. plastics, and some knee articulations.

Sections:
- Plaster room.
- Plastics moulding.
- Leather work ie. shoes.
- Metal work ie. callipers, wheelchairs.

Vocational training activities:
There is a large unused sewing section with more than 1/2 doz. treadle machines. This had formerly been used to teach sewing skills to the physically handicapped, but it is now inoperative.

Wheelchairs / Tricycles:
The tricycles one sees being used by disabled people in Bamako, are made at the Institute.

Price list:
1. Tricycle
   - with rod and steering wheel 95,000FCFA.
   - with pedals 85,000FCFA.
2. Motorised (Client must provide his own motorbike / moped).
   - BBCT 75,000FCFA for the work and parts.
   - Moto Kameco 100,000FCFA " "
   - Yamaha 100,000FCFA " "