

**Pd – The Key To Linkage of Skills, Settings and Technology  
- An Example of pd Linkage In Health Care –**

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**Key terms:**

Skill -

A given use of one's body for achieving desired outcomes

Pd skill –

Skill derived from optimum use of the human body in open space or pd settings with no effect from surroundings or preconceptions

Specialty based skills –

A particular use of one's body applied to specialties or techniques

Setting for organized activities –

The surroundings of one or more people that has an effect on themselves, their relationships, their acts or the outcomes of acts

Feedback –

An explanation for the learning of motor skills;

sensory stimuli set up by the motor act produce correction in the nervous system system (Stedman's medical dictionary)

Proprioceptive feedback –

The return of signals from internal organs such as muscles, joints or the vestibular organs that relate us to positions, acts and surroundings.

pd/dp (proprioceptive derivation; proprioceptively derived, derived from proprioceptive feedback)-

Deductive reasoning based on proprioceptive feedback or

The information from inside one's body that relates one to acts and surroundings

pd SATV 0-6 (7 steps of Skill Acquisition, Transfer and Verification dp)

A method for deriving and verifying the optimum use of the human body and appropriate technology applied to clinical procedures with data bases. The SATV data bases link 1) human centered derivations 2) exercises on simulated body organs/tissues/pathologies and 3) role simulations to clinical acts and settings.

(Refer to appendixes for examples of application in dentistry)

**Introduction**

The industrial age produced a health care field that is heavily dependent on technology. It also produced a great demand for standards. This has resulted in accredited curriculums that produce licensed personnel from medical, dental, nursing, pharmaceutical and other schools. Also with a concern for safety, national and international standards organizations have regulated or set standards for drugs, equipment, devices, health care settings and information.

On the other hand standards for skills do not exist beyond the range of individual schools, hospitals or service organizations. While there is much interest in restoring the abilities or health of

the human body, there has been little interest in determining optimum use of the human body for providing health care. Skill is simply identified as an ability to achieve desired outcomes with applications focused on various parts, functions, and disorders of the human body. This has led to a large variety of specialties which are recognized at the administrative levels of governments and schools. In these specialties the ability to achieve given outcomes with poorly designed instruments or in compromised settings is often seen as a useful test of skill. This credit was certainly indicated in the early industrial period, but today, overall, it has negative value for patients and all who support the health care field, since it delays progress in health care.

### **Specialty based skills**

Specialty centered skills are identified with careers, settings or techniques. “What do you do?” “I am a surgeon.” “What kind of surgeon?” “Abdominal.” “Are you using laparoscopies?” “As much as possible.” – With these questions we have captured the image of a person’s career, the setting of activity and an interest in a technique. How does a surgeon with skills based on use of scalpels, probing fingers and tying sutures transfer his/her skills to use of laparoscopies? How many patients are at risk of complications – not because of the laparoscopy technology, but because of the problems of acquiring or transferring skills that are based on manuals and emulation with trial and error?

This is only one example of change that is taking place throughout the field of health care from rapid and costly testing and adoption of new technologies. Specialty based skills are centered on what we can do with what we have now, what we are teaching now, or how our present “new” techniques compare with the past conditions of our specialty. From this point of view, we often see progressive changes mixed with retrogressive changes.

The following are problems of specialty centered skills;

- 1 Inability to differentiate skill problems from problems of settings or technology,
- 2 High cost and unnecessary risk to patients due to accommodation of specialty centered skills in the health care field,
- 3 Difficulty in acquiring and transferring skills due to lack of principle for procedure,
- 4 Inability to correlate use of one’s body with consistent accuracy in outcomes and productivity.
- 5 Confusion and needless stress for patients, providers, engineers, students and administrators due to the above mentioned problems.

### **Pd skills – Optimum use of the human body**

Pd skills are acquired from derivations in open space with no preconceptions and then pd muscle memory sets are established and maintained in pd settings. Pd based skills can cover all specialties now and in the future, while specialty based skills reflect past habits and the use of dated technology associated with specialty techniques.

What is the key to linkage of skills, settings and technology? Wilfred Barlow MD pointed out in his book “The Alexander Principle” that misuse of the neck results in misuse of the rest of the body. This includes the fingers, lower back, feet, jaws and eyes. The optimum use of the body begins with the use of the neck, from which we can proprioceptively derive the optimal use of remaining muscles of the body. The use of the neck can be specified for both resting conditions and purpose-oriented activities. It is not only the key for determination of skills, settings and human interface with technology, but it also affects musculo-skeletal health which, in turn, may affect the health of other organs.

Use of the neck is analyzed from tracings of one or more points on the head in relation to other points on the body. Also EMGs and X-rays have been widely used particularly in studies of neck associated pain. After the parameters of the head-trunk relationship have been established for achieving a desired outcome, then the 0 locations and paths of motions of the remaining segments of the body can be traced with a high focus on finger points and instrument points. Accuracy of outcomes is highly accountable.

When should we be concerned with the use or misuse of the human body? We are concerned with it when consistent accuracy is required, when our judgments on skills, settings and technology affect the lives of many, and when we want to prevent or correct personal health problems caused by misuse of our bodies.

### **For Patients, Providers, and Decision Makers for Hospital and Clinic Settings - An Example of pd linkage in the oral sector of health care –**

The Clinical skills-Technology program provides 7 stages of exercises with entries into data modules, which have been developed for acquisition of skills and optimum human interface with settings and technology. In Stage 0 exercises participants identify 0 conditions for “What I want” and “What we want” as care receivers and care providers. Data is collected from cameras, microphones, pressure and other sensors. It is recommended that the program be part of LAN structure that covers all needs of hospitals, clinics and schools of health sciences.

After the SATV exercises, performers easily transfer their skills to pd clinical conditions where they can be verified. Furthermore SATV exercises serve as a very useful tool not only for skills but also for assessment of human interface with instruments of installed technology in all types of settings for health care.

### **Conclusions**

The study of human factors deals with the interface between human beings and settings. Today, especially in health care settings human beings interface extensively with specialized treatment and information technology, often in the form of big machines. Human interface engineers must know the appropriate basis for human acts before specifying the human-setting/technology interfaces.

In summary;

1. Pd is the core of ergonomics.
2. Pd skills are needed for the field of health care.
3. Pd skills need pd space, pd settings and pd technology.

**SATV Stage 0- Human Centered Derivations**

**For End Users, Engineers, Administrators, Performers, and Policy Makers**

Purpose:

- To identify 0 conditions for “What I want” and “What we want” as providers and patients.
- To acquire human-centered conditions from proprioceptive derivations.

Steps: 1) Body Conditions & Acts, 2) Human Space & Interface, 3) Settings, 4) Technology

Conditions:

- No preconceptions. 0 concept reasoning.
- Coordinate-based imagery of human beings, settings, and desired outcomes.
- Level surfaces for full rest and free upright walking, standing, and sitting.
- Open space. No influence from external condition – e.g., chairs, tables, lighting, etc.
- Appropriate measurements devices and recording forms.

**SATV Stage 1 – Positions, Contacts, Sightings (Simulation)**

**For Performers**

Purpose:

- To acquire muscle memories for: optimum finger control for precision, minimum distraction from patients, a healthy spine, minimum body tension.

Conditions (fro dentistry):

- A SATV 1 simulated mouth, proprioceptively approved instruments, cassette tapes.
- Certification forms, certifiers, and recorders.

**SATV Stage 2 – Basic Finger Control and Accuracy (Simulation)**

**For Performers**

Purpose:

- To acquire consistent accuracy, minimum treatment time, minimum numbers of finger-instrument contacts.
- To reinforce muscle memory sets established in SATV 0 and SATV 1.

Conditions (for dentistry):

- Skill acquisition settings with pd performance stations and self-evaluation stations.
- Proprioceptively derived dimensions and positions of seat in relation to finger control point.
- Approved positions for simulated heads, mouths, tissues, and pathologies.
- Minimized need for positioning acts of others or objects.
- Multimedia LAN notebook computer, syntax, cameras, microphone audio-video, and recording forms for self-evaluation of acts and outcomes.

**SATV Stage 3 – Skill Transfers (Example – to surgery Simulation)**

**For Performers**

**SATV Stage 4 – Patient, Doctor, Assistant Roles (Simulation)**

Purpose:

- To verify proprioceptively approved clinical settings.
- To acquire interpersonal skills in pd settings.

Conditions (for dentistry):

- Role simulations of operators, patients, assistants, receptionists technicians, consultants, etc.

**SATV Stage 5 – Patient Treatment (Clinical)**

**SATV Stage 6 – Patient Communication (Clinical)**

Spelling corrected on 010119.