

The use of case/problem based learning to meet the challenge of integrating the philosophy and principles of osteopathy into teaching.



Dr Paul Orrock DO GradCertHigherEd MAppSc PhD
paul.orrock@scu.edu.au

Osteopathy



Osteopathy is a healthcare profession that is underpinned by biopsychosocial and holistic principles, and that focuses on the health and mobility of all tissues of the body. Osteopathic healthcare includes a thorough primary care assessment and the application of a range of manual therapies and health promotion strategies tailored to the individual that aim to optimise function and health.

(Orrock, P.J. PhD Thesis, Southern Cross University, 2017.

https://researchportal.scu.edu.au/discovery/delivery?vid=61SCU_INST:ResearchRepository&repId=1266909220002368#1367450720002368

Clinical reasoning

Clinical medicine is a casuistic (case-based) enterprise,

- personal and prudential, requiring clinicians to weigh and negotiate between
- multiple potential facts,
- values, and
- reasons

in order to arrive at the best choice for a particular individual in need of healing

(Tonelli, 2009)

So, where do philosophy/principles fit in reasoning?

Osteopathic reasoning

Osteopathic practice appears to require a process blending deductive and inductive reasoning (Grace and Orrock, 2015; King et al, 2018; Orrock et al, 2014).

The challenge for educators is to produce safe and competent practitioners of evidence based scientific medicine whilst integrating the principles and philosophy for success in the art of practice.

It has been reported that the health and viability of the profession depends on the incorporation of these distinctive principles in the teaching of students (Gevitz, 2006).

Case Based Learning

- Utilises a pedagogical framework of unique real-world issues
- is known to engage and motivate students and staff (Thistlethwaite et al, 2012)
- reflects a constructivist paradigm, which emphasises the process and not the product – how a student arrives at a particular answer and not the “objectively true” solution (Dorit, 2015; Murphy, 1997).
- is tailored, individualised, patient centred (Murphy & Radloff, 2019).

- Pedagogical effects
 - Enhances higher order learning (McLean, 2016)
 - in the SOLO taxonomy of learning this is in the “extended abstract” level, the items are “evaluate”, “predict”, “generalize”, “create”, “reflect”, or “hypothesize” in higher mental order tasks
 - Encourages self-learning, analytical and problem-solving, clinical thinking and clinical practice

(Yang et al, 2021)

Teachers as facilitators of clinical reasoning



- CBL teachers become “midwives in the birth of understanding” as opposed to being “mechanics of knowledge transfer” (Glaserfeld, 1996).
- To the constructivist, concepts, models, theories, etc., are “viable,” if they prove adequate in the contexts in which they were created.
- Clinical or professional reasoning cannot be conducted without careful consideration of the characteristics and needs of each individual client, as well as the environment or context (Glaserfeld, 1996).

BioPsychoSocial flags used as cues

- Red Medical pathology
- Orange Psychiatric pathology
- Yellow Psychological factors
- Blue Individual work/social perceptions
- Black Work systems factors

- Green Principles and philosophy

Case example

with cues for reasoning

Presenting Complaint:

32 yo male with constant pain and difficulty weight bearing in right lower leg and ankle, onset after compound crush fracture tibia and fibula in Motor Vehicle Accident 12 months ago. Surgery post MVA – intra-medullary nail in tibia, fixed by screws at distal medial malleolus and superior tibial plateau.

Dull throbbing ache 3-4/10 in lateral leg refers into ankle; sharper 8/10 in anterior ankle when weight bearing
Aches at night – not sleeping; swollen and tight during the day

Has had right lower back pain recently – is hesitant to bend forward to lace shoes in case he injures himself – pain spreads posteriorly to right lower thorax, and feels unable to take a deep breath.

Previous Medical History:

fit and well mostly, one bad respiratory infection two years ago – diagnosed as right sided pneumonia; has been a vegetarian for 10 years,

Social History:

Works as landscape gardener – loves his work, married with 3 children – all healthy, wife studying part time, not much time for sport or exercise –

Presenting Complaint:

32 yo male with constant pain and **difficulty weight bearing** in right lower leg and ankle, onset after compound crush **fracture tibia and fibula in Motor Vehicle Accident 12 months ago**. Surgery post MVA – intra-medullary nail in tibia, fixed by screws at distal medial malleolus and superior tibial plateau.

- **Post fracture infection – chronic osteomyelitis; non-union;**

Dull throbbing ache 3-4/10 in lateral leg refers into ankle; sharper 8/10 in anterior ankle when weight bearing
Aches at night – not sleeping; **swollen and tight during the day**

- **Compartment syndrome; inflammation/infection;**

Has had right lower back pain recently – is hesitant to bend forward to lace shoes in case he injures himself – spreads posteriorly to right lower thorax, and feels unable to take a deep breath.

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- **Chronic pain syndrome – post traumatic; psychological distress**

Dull throbbing ache 3-4/10 in lateral leg refers into ankle; sharper 8/10 in anterior ankle when weight bearing
Aches at night – **not sleeping**; swollen and tight during the day

- **Post traumatic distress – depression;**

Has had right lower back pain recently – is **hesitant to bend forward to lace shoes in case he injures** himself – spreads posteriorly to right lower thorax, and feels unable to take a deep breath.

- **Fear avoidance behaviour; sensitised?**

Previous Medical History:

Fit and well mostly, one bad respiratory infection two years ago – diagnosed as right sided pneumonia; has been a vegetarian for 10 years,

- **Dietary deficiency – Fe? Protein?**

Social history

Works as **landscape gardener** – loves his work, married with 3 children – all healthy, wife studying part time, **not much time for sport or exercise**

- **Employment threatened – financial stress;** compensation – injured at work; **sedentary/poor fitness**

Presenting Complaint:

32 yo male with constant pain and difficulty weight bearing in right lower leg and ankle, onset after compound crush fracture tibia and fibula in **Motor Vehicle Accident** 12 months ago. Surgery post MVA – intra-medullary nail in tibia, fixed by screws at distal medial malleolus and superior tibial plateau.

- **Global effect of trauma (endocrine/stress); body unitary; neurological and metabolic-energetic model**

Dull throbbing ache 3-4/10 in lateral leg refers into ankle; sharper 8/10 in anterior ankle when weight bearing

Aches at night – **not sleeping; swollen and tight during the day**

- **Metabolic-energetic model; respiratory-circulatory model**

Has had right **lower back pain recently** – is hesitant to bend forward to lace shoes in case he injures himself – spreads posteriorly to right lower thorax, and feels unable to take a deep breath.

- **Biomechanical model; respiratory-circulatory model;**

Previous Medical History:

fit and well mostly, one bad respiratory infection two years ago – diagnosed as right sided pneumonia; has been a vegetarian for 10 years,

- **?viscero-somatic link; metabolic-energetic model**

Social History:

Works as landscape gardener – loves his work, married with 3 children – all healthy, wife studying part time, not much time for sport or exercise –

- **Immunity - respiratory-circulatory model; behavioural-biopsychosocial model**

Case example (cont)

Physical examination

Thin build – anxious looking; leaning on walking stick on the right; scars on lower leg matching surgery – red, hot, oedematous scar medial mid tibia; atrophy in right LL compartments – quadriceps, ant tib, calf; right knee – patella ligament inflamed and boggy, ligament tests NAD,

Musculoskeletal screen

Right positive SIJ mobility tests, right lumbar spine paravertebral mm hypertonic with restricted sidebending, right tibia internal rotation restriction; right talus post glide restriction, fibula fixed proximal and distal;

Case example (cont)

Physical examination

Thin build – anxious looking; leaning on walking stick on the right; scars on lower leg matching surgery – red, hot , oedematous scar medial mid tibia; atrophy in right LL compartments – quadriceps, ant tib, calf; right knee – patella ligament inflamed and boggy, ligament tests NAD,

- Post fracture infection – chronic osteomyelitis; non-union
- Chronic pain syndrome – post traumatic; psychological distress
- respiratory-circulatory model

Musculoskeletal screen

Right positive SIJ tests, right lumbar spine paravertebral mm hypertonic, and restricted sidebending, right tibia internal rotation restriction; right talus post glide restriction, fibula fixed proximal and distal;

- Adaptation
- Postural structural; respiratory-circulatory model



Case example

Learning Outcomes

Issues (that students are expected to consider)

Chronic pain

Medications

Slow healing

Referral

Fear avoidance behaviour

Depression

Occupational return to work

Graduated exercise

EXPECTED:

- Students able to bridge from biomedical safety/objectivism reasoning to BPS context driven constructivism
- Identify red flags, list and analyse most likely DDs, and consider the impact of psychosocial issues;

Case development and application

| Unit objective (core concepts) Eg Osteopathic Medicine 1 | CASE 1 | CASE 2 | CASE 3 | CASE 4 | CASE 5 | CASE 6 |
|---|--------|--------|--------|--------|--------|--------|
| Identify the signs and symptoms of disease in patient presentations in the orthopaedic system, •demonstrate an understanding of the diagnostic processes in this system, including physical examination, laboratory and imaging technologies. * Construct management of patient cases based on an integrated diagnostic process | ✓ | ✓ | | | | |
| Identify the signs and symptoms of disease in patient presentations in the rheumatological system, •demonstrate an understanding of the diagnostic processes in this system, including physical examination, laboratory and imaging technologies. * Construct management of patient cases based on an integrated diagnostic process | | | ✓ | ✓ | | |
| Identify the signs and symptoms of disease in patient presentations in the neurological system, •demonstrate an understanding of the diagnostic processes in this system, including physical examination, laboratory and imaging technologies. * Construct management of patient cases based on an integrated diagnostic process | | | | | ✓ | ✓ |
| Critically explore the integration of the osteopathic concept of health and disease with the diagnostic processes | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |



Review of CBL

I have presented on PBL/CBL before that it is very popular and works well in third and fourth year.

- Students love the authentic learning but complain about workload
- Suggest:
 - Build real cases with clinical team
 - Match to learning objectives
 - Review of evidence assessment requires data search skills
 - Mix elements of the case year by year and develop library of cases
 - Class size around 20 max
 - Students presentations in class

Issues to consider

- What year level are the students?
 - This type of learning can be introduced early, but requires students to be in clinical years when they accept the constructivist view that decisions depend on context
 - Cases could be used earlier with simple pathological cues
- What is their personal worldview?
 - Some students struggle as they only want to know the objective knowledge to make a decision (what is right/wrong; evidence/non-evidence);
 - Cues have to be carefully considered to be logical and not too open ended.

Adjusting for year level in case

Year 2/3;

Dominated by biomedical pathology differentials

Considers

- infection,
- slow healing,
- postural structural model (is there a limp, has the limb been shortened?, kinematics/kinetics),
- referral to surgeon, biomechanical model, soft tissue techniques/MET;

Year 4/5

Developing BPS reasoning

Considers the above as well as

- depression,
- central sensitisation,
- exercise therapy,
- metabolic-energetic model, neurologic model; respiratory-circulatory model,
- referral psychologist, coaching and behavioural interventions;

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Thank you