



FOCUS ON
HEALTH

Dental Assisting, Dental Therapy & Oral Hygiene

Self-study CPD activity

Activity Reference Number

B6(25) 2029

Topic

Preventing musculoskeletal disorders

Article(s)

Top tips for preventing musculoskeletal disorders and optimising posture
for dental professionals

Profession(s)

Dental Therapist

Oral Hygienist

Dental Assistant

Dentist

This activity is approved for **TWO (2) Clinical** Continuing Education Units (CEU's)



Top tips for preventing musculoskeletal disorders and optimising posture for dental professionals

By Carol Robinson,¹ Dhruvi Mysore,² Ewen McColl³ and Sunitha Bhagavathi Mysore⁴

Introduction

There cannot be many members of the dental team who have not suffered from musculoskeletal aches and pains on a regular basis, but little emphasis is placed on this area of health and its effect on the dental team.¹ Dental professionals are one of the highest risk groups for developing musculoskeletal disorders (MSD).² Neck, back, shoulder and wrist pain are most commonly reported amongst dentists, dental therapists and dental hygienists.³

To ensure a successful and lengthy career, looking after our health, both physical and mental is vital. Dentistry is a physically demanding profession, with clinicians having to adopt static positions for extended periods of time to facilitate good vision and access. Reduced productivity, frequent absences and early retirement have all been correlated to MSD-related pain.⁴ When investigating causes of ill-health retirement within

dentistry, MSDs were reported to be the most common cause.^{5,6} Therefore, it is crucial that dental professionals are equipped with tools to prevent and manage MSDs as the long-term consequences can be severe.

In this article we provide a series of practical tips to minimise MSDs and improve posture for all members of the dental team. The tips are borne from years of experience and observation of serious ill effect when good posture in clinical practice is ignored.

Top tips

The following tips will cover:

1. Understanding posture while standing and operating
2. How to sit correctly at a screen
3. Adjusting your patient
4. Proper use of lighting and sharp instruments
5. Buying a saddle seat and loupes
6. Moving and stretching regularly.

1. Understand posture

Posture is the way you hold your body when moving (dynamic) or at rest (static). There are guidelines for dentists on ergonomics and posture from organisations such as the FDI World Dental Federation and in various papers found in dental journals.^{7,8,9} Mastering the correct posture while standing, operating, and sitting at a computer will guarantee long-term health benefits.

a. Standing posture

Your spine has three curves, which you need to maintain. You may have to retrain your body to achieve good posture if you have developed unhealthy habits over the years. Standing correctly helps to distribute your weight across your joints, reducing strain and stress (Fig. 1). Try this out now:

- Stand with your feet hip width apart, ankle bones under hip bones
- Do not lock your knees, keep them soft ▶▶



Fig. 1 a, b) Optimal standing posture. Courtesy of Peninsula Dental School staff and Carol Robinson



Fig. 2 Seated posture. Courtesy of Peninsula Dental School staff and Carol Robinson

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- Gently tilt your pelvis backwards and forwards and allow it to settle into a neutral position
- Shrug your shoulders a few times and bring them down and back so your shoulder joints are over your hip joints, and horizontal
- Let your arms relax down by your sides
- Let your neck, jaw and eyes relax, and feel the crown of your head gently lift
- You should already feel taller and more evenly balanced.

b. Posture for the seated clinician

Healthy sitting posture while working is critical for preventing musculoskeletal disorders, as it encompasses a large part of the working day (Fig. 2):

- Sit in a stable, upright, symmetrical position⁸
- Lower legs vertical
- Look perpendicularly onto the surface you are working on either by direct vision or in the mirror
- The oral cavity should be at mid sternum height
- Your forearms should be horizontal or no more than 25° up from horizontal, and elbows should be tucked in

- Head should be tilted no more than 20° in any direction
- Move your chair or the patient so you can maintain this position for 80% of your working time
- Keep the other 20% for treating those patients who cannot lie in a supine position (eg pregnant women or bariatric patients)
- Keep your delivery unit at elbow height to avoid over stretching.

Even with gold standard posture, staying in one position for too long – known as prolonged static postures (PSPs) – can result in muscle stiffness and disorders.¹⁰ Make sure you move around every now and then to avoid PSPs.

c. Posture for the dental nurse

- Sit in an upright position
- Should be sitting higher than the clinician, so that the dental nurse's eyes are approximately 10 cm above the clinician's (Fig. 3)
- Stand up if you need to¹¹

2. How to sit correctly at a screen

You may need to adjust the height of either your desk, chair, table or screen to achieve the optimal seated position (Fig. 4).

- Sit with both feet flat on the floor, lower legs vertical and a 90° angle behind your knees^{4,6}
- Sit up straight with relaxed shoulders²
- Allow the back of your chair to support you⁵
- Shoulder joints above hip joints²
- Fore arms flat on desk or table³
- The top of your screen should be level with your eyes¹
- The screen should be about an arm's length away.⁷

3. Adjust the patient

- The patient should lie supine, only then can you achieve good posture yourself
- Ensure they have pulled themselves right back into the angle of the chair
- Adjust the double articulating headrest correctly: practise with a colleague to find how comfortable this is, even though it looks very odd
- The headrest should support the head on the back of the skull on the mastoid bone
- Use a wipeable cushion or folded towel if the gap between chair and headrest is long
- Adjust the headrest so the patient's chin is up when treating upper teeth, down when treating lower teeth (Fig. 5)
- Ask the patient to move their head as required. ▶▶



Fig. 3 Gold standard clinician and dental nurse posture. Courtesy of students at Peninsula Dental School and Carol Robinson



Fig. 4 How to sit at a screen. Contains public sector information published by the Health and Safety Executive and licensed under the <https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>

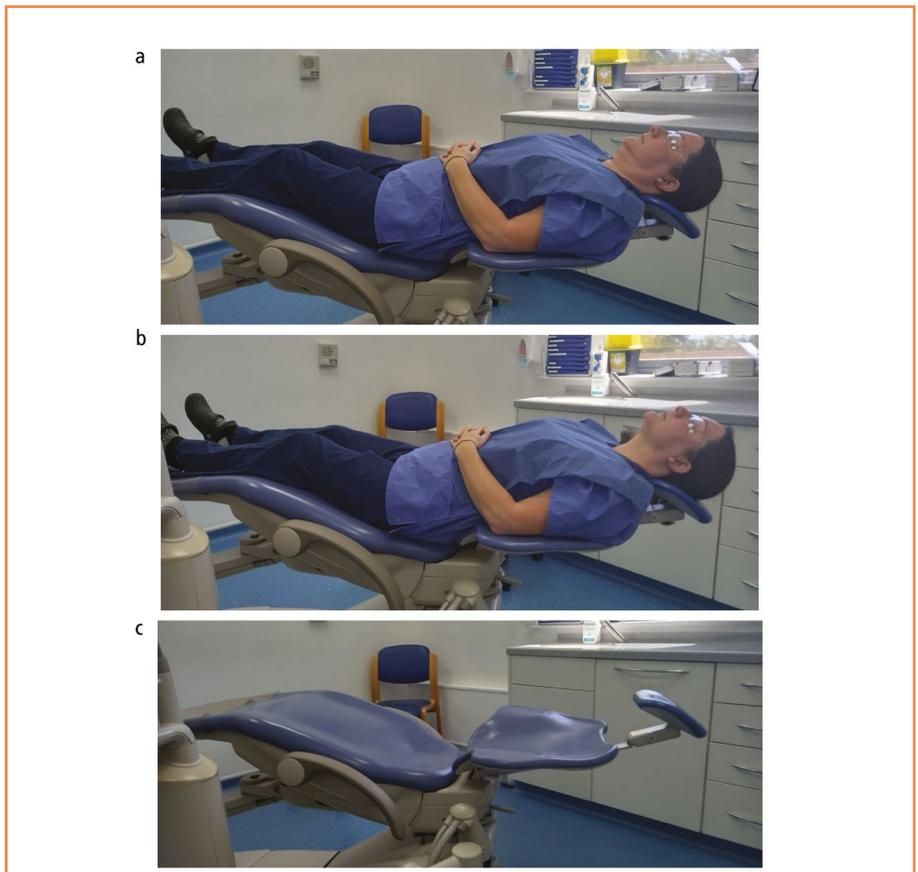


Fig. 5 a, b, c) Note position of headrest. Chin down is good for working on lower teeth, whereas chin up is preferred for upper teeth. Courtesy of Staff at Peninsula Dental School and Carol Robinson

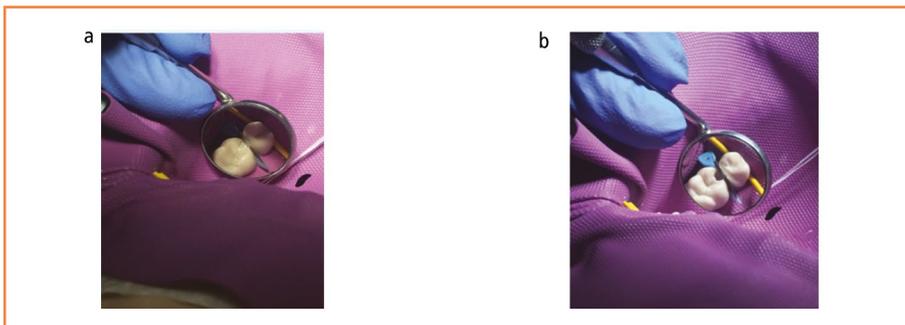


Fig. 6 a) Improper use of lighting can cause shadows. b) Adjusting the operating light to reflect the light back from the mirror into the cavity is a game changer. Courtesy of Carol Robinson



Fig. 7 Perio tray courtesy of Peninsula Dental School and Carol Robinson

4. Lighting

a. Proper use of:

- Your operating light should be positioned so the light runs parallel to your line of vision
- Use your mirror to reflect the light into the cavity, no shadows! (Fig. 6a)
- If you use a light on your loupes, do not forget to use the operating light (Fig. 6b). Your dental nurse would like to see as well.

b. Use sharp, ergonomically designed instruments¹²

- Use light instruments which have a large diameter (Fig. 7)
- Instruments with a textured grip are easier to grasp, beneficial during scaling (PMPR) as the amount of force required is reduced
- Hand fatigue can be minimised by using sharpened instruments
- Instruments may be sharpened in practice with the right tool and technique or can be sent for professional sharpening.

5. Buy an ergonomic seat

Buying an ergonomic seat, especially one that is saddle shaped is a great investment and can make achieving good posture so much easier. Once adjusted correctly, this will allow you to sit with a correctly aligned spine. Try out various makes until you find the one that suits you best. Tilting the seat 5–15 degrees allows for a closer position to the patient with less lower back strain. If chairs cannot be tilted, then a wedge-shaped cushion can be used.

6. Use magnification loupes

You are executing precise movements in a dark, wet cave that keeps moving. Use of magnification loupes with a direct light source not only helps meet your visual demands but has demonstrated improved posture and reduced musculoskeletal pain.^{13,14}

- Choose a pair of loupes that suit your daily needs, has an angle of declination of 40° and a light to go with it

- General dentistry needs no more than 3.5x magnification. Save high magnification and costs for the specialists!
- Try refractive loupes; they ensure the neck stays upright.

See Figures 8 and 9.

7. Move and stretch!

Static muscle pain occurs when the load on the muscles is constant and unrelenting throughout an activity.

- Stand up and move about between patients
- Walk or bike to work if you can or go for a short stroll at lunch time
- Stretch your neck, shoulders, lower back, hands, and wrists regularly – especially between patients and at the end of the day
- Take a few seconds during a long procedure to be mindful of posture and muscle strain
- Ten minutes of daily stretching can make a world of difference, as will attending a Pilates or yoga class for a full body stretch
- Make friends with your physiotherapist, osteopath, chiropractor, or massage therapist.

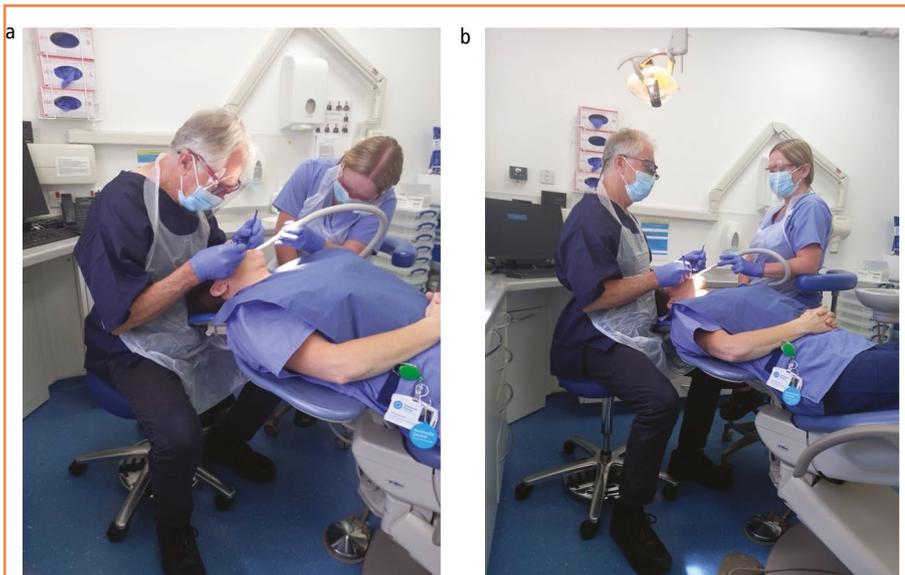


Fig. 8 a) Poor posture from both clinician and dental nurse; b) improved by sitting correctly on saddle seat, wearing loupes and correcting position of operating light. Courtesy of staff at Peninsula Dental School and Carol Robinson

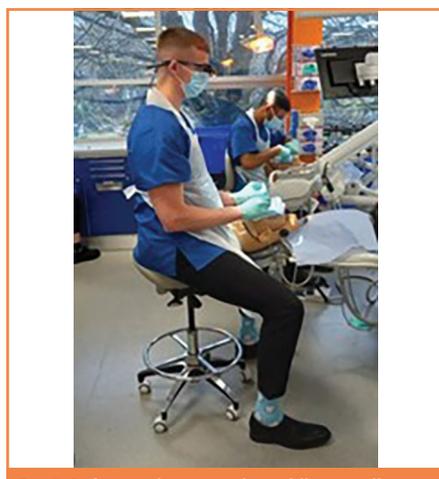


Fig. 9 Refractive loupes and a saddle seat allowing excellent seated posture for an extremely tall ex-basketball player. Courtesy of student from Peninsula Dental School and Carol Robinson

◀ There are several online materials available to correct posture, avoid fatigue and move better including exercises to avoid wrist and hand strain¹⁵ and videos of exercises and tips for better posture by physiotherapists.¹⁶

Conclusion

The tips provided in this article are pragmatic and achievable by all, with the benefits being abundant. Using these tips may be the difference between an early ill-health retirement and a long fruitful career as a dental professional. ■

Photos: Permissions obtained for this publication.

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Tweaks at margin leave NHS dentistry recovery stalled

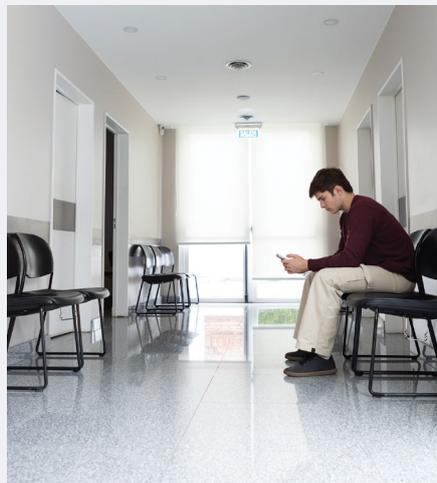
The British Dental Association (BDA) has warned that the future of NHS dentistry still hangs in the balance, with unambitious policies from the last government resulting in a glacial recovery in services in the last year.

The NHS Dental Statistics for England 2023/24 show just 40.3% of adults were seen by an NHS dentist in the 24 months up to 30 June 2024, up by less than a percentage point on last year's figures (39.6%) and lagging behind the same period to September 2019 when the proportion stood at 49.4%.

Just 56.1% children were seen by an NHS dentist in the 12 months up to 30 June 2024, compared to 59.7% in the year to September 2019.

Overall, 34.1 million courses of NHS dental treatment were delivered in England in 2023/24, up just 4.3% on the previous year, and lightyears from the 39.7 million delivered pre-pandemic in 2018/19, a time when access problems were already widespread across the country. Total Units of Dental Activity delivered increased by just 3.4% from 2022/23.

The 24,335 dentists recorded as delivering NHS dentistry in the last year



represent increase of a mere 0.5% on 2022/23 figures and fails to recover ground lost since lockdown. The BDA warns the numbers understate the full scale of losses. Official data count heads, not NHS commitment, giving the same weight to a dentist doing a single NHS checkup a year as an NHS full timer. The BDA warn that the growing number of dentists reducing the amount of NHS work they do is effectively going untracked in these figures.

The period covered by the new figures includes the rollout of the previous

government's Recovery Plan, which failed to confront the discredited NHS contract fuelling both workforce and access crises.

The Labour Party pledged contract reform in its manifesto, and the BDA has been encouraged by early talks with the new government. It says that maintaining momentum is key to meeting the huge unmet need for dentistry and keeping demoralised dentists on board, and that government will need to demonstrate both urgency and ambition.

BDA analysis of GP Survey data out last month indicated unmet need for NHS dentistry in England now stands at 13 million, or over one in four of the adult population. Pre-pandemic numbers stood at around 4 million, or one in ten of the adult population.

BDA Chair Eddie Crouch said: 'Tweaks at the margins have failed to deliver for millions struggling to access NHS dentistry.

'The last government said its recovery plan would make things faster, simpler and fairer.

'The reality is the recovery has stalled, and a new government needs to offer real change to give this service a future.' ✦

QUESTIONNAIRE

B6(25)

Top tips for preventing musculoskeletal disorders and optimising posture for dental professionals

INSTRUCTIONS

- Read through the article and answer the multiple-choice questions provided below.
- **Some questions may have more than one correct answer;** in which case you must mark **all** the correct answers.

Introduction

Question 1: Is it **TRUE** or **FALSE** that dental professionals are at a high risk for developing musculoskeletal disorders (MSD)?

- A: TRUE
- B: FALSE

Question 2: Pain in the is the most commonly reported by dental clinicians?

- A: Neck
- B: Back
- C: Shoulder
- D: Hips
- E: Wrist

Question 3: MSD-related pain has correctly been correlated with which of the following?

- A: Decreased productivity
- B: Infrequent absences
- C: Early retirement

Question 4: A healthy sitting posture while working is critical for preventing musculoskeletal disorders. Which of the following is **TRUE** in this regard?

- A: The oral cavity should be at a low sternum height
- B: Head should be tilted no more than 20° in any direction
- C: Look at an angle of 45° onto the surface you are working on
- D: Sit in a stable, upright, symmetrical position
- E: Forearms should be horizontal or no more than 25° up from horizontal

Question 5: Which of the following can avoid muscle stiffness and disorders?

- A: Moving around every now and then
- B: Staying in one position for long periods which is also known as prolonged static posture
- C: Following a stretching regime before and after working hours

Question 6: When sitting at a screen, which of the following describes the correct position of the screen?

- A: The top of the screen should be lower than your eye level
- B: The screen should be half an arm's length or less away
- C: The screen should be about an arm's length away
- D: The top of the screen should be level with your eyes

Question 7: When adjusting the patient, which one of the following is **INCORRECT**?

- A: The patient should lie supine
- B: Adjust the double articulating headrest correctly
- C: Adjust the headrest so the patient's chin is down when treating upper teeth and up when treating lower teeth
- D: Ask the patient to move their head as required

Question 8: Which of the following can specifically be done to avoid shadows in the cavity?

- A: Position the operating light to run parallel to the line of vision
- B: Use a mirror to reflect the light into the cavity
- C: Use a light on the loupes

Question 9: Which one of the following is best indicated to minimise hand fatigue?

- A: Using instruments with a large diameter
- B: Using instruments with a textured grip
- C: Using sharpened instruments

Question 10: Which of the following can help relieve static muscle pain?

- A: Standing and moving about between patients
- B: Walking or biking to work
- C: Staying in the prolonged static posture position during a long procedure
- D: Stretching the neck, shoulders, lower back and wrist regularly
- E: Being mindful of posture and muscle strain

THE END



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ANSWER SHEET

B6(25)

Top tips for preventing musculoskeletal disorders and optimising posture
for dental professionals

		*Time spent on activity					hour		min				
	A	B	C	D	E		A	B	C	D	E		
1						6							
2						7							
3						8							
4						9							
5						10							

How relevant was the content of this activity to your scope of practice?			
			
Not at all	Somewhat	Mostly	Extremely

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