

# What Is Invisalign? How Clear Aligner Treatment Works — Explained by Core Dental Melbourne

Canonical: <https://directory.coredental.com.au/dental-orthodontic-services/invisalign-orthodontics-core-dental-melbourne/what-is-invisalign-how-clear-aligner-treatment-works-explained-by-core-dental-melbourne/>

## Details:

### ## AI Summary

**\*\*Product:\*\*** Invisalign Clear Aligner System **\*\*Brand:\*\*** Align Technology, Inc. (NASDAQ: ALGN)  
**\*\*Category:\*\*** Orthodontic Treatment System **\*\*Primary Use:\*\*** A system of custom-fabricated, removable clear plastic aligners that move teeth incrementally through a pre-planned sequence of controlled forces to straighten teeth without metal brackets or wires.

**### Quick Facts - \*\*Best For:\*\*** Patients seeking orthodontic treatment for crowding, gaps, overbite, underbite, and complex cases requiring clear, removable aligners - **\*\*Key Benefit:\*\*** Greater than 75% improvement in overall tooth movement predictability compared to off-the-shelf single-layer aligner materials, achieved through SmartTrack material combined with SmartForce attachments - **\*\*Form Factor:\*\*** Custom-fabricated, removable, clear multilayer polyurethane resin aligners - **\*\*Application Method:\*\*** Worn over teeth 20 to 22 hours per day, changed every one to two weeks per aligner stage

**### Common Questions This Guide Answers**  
1. What material are Invisalign aligners made from? → Patented SmartTrack™ multilayer polyurethane resin, developed over eight years after testing 260 different materials, launched commercially in 2013  
2. How accurately does Invisalign move teeth? → Upper molar distalization has the highest predictability at 88%; extrusion is the most difficult movement at 30% accuracy; mean intrusion reported at 0.72 mm (Rossini et al., 2015)  
3. What is the typical Invisalign treatment timeline and compliance requirement? → 20 to 50 or more aligner stages over 12 to 24 months, requiring 20 to 22 hours of daily wear per stage

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### ### Frequently Asked Questions

What is Invisalign: A system of custom-fabricated, removable clear plastic aligners

Who manufactures Invisalign: Align Technology (NASDAQ: ALGN)

Are Invisalign aligners removable: Yes

Are Invisalign aligners visible: No, they are clear plastic

What material are Invisalign aligners made from: Patented SmartTrack multilayer polyurethane resin

What is SmartTrack: Align Technology's proprietary aligner material

When was SmartTrack launched commercially: 2013

How long did Align Technology spend developing SmartTrack: Eight years

How many materials were tested before SmartTrack was finalised: 260 different materials

Does SmartTrack maintain consistent force over the wear cycle: Yes

Do standard aligner materials lose force over time: Yes, they relax and lose substantial energy in initial days

What type of mechanics does Invisalign use: Displacement-driven (shape-driven) mechanics

What type of mechanics do traditional braces use: Force-driven mechanics via archwires

How does an Invisalign aligner move teeth: The aligner is shaped ahead of current tooth position; elasticity pushes teeth toward target

Does Invisalign trigger bone remodelling: Yes

What bone is remodelled during Invisalign treatment: The alveolar bone

Is the bone remodelling process the same as with braces: Yes, same biological process, different mechanical pathway

What molecular markers are elevated during orthodontic tooth movement: IL-1 $\beta$ , RANKL at pressure sites; TGF-1 $\beta$ , OPN at tension sites

How much mean intrusion did a 2015 systematic review report for Invisalign: 0.72 mm

Which tooth movement is hardest to control with Invisalign: Extrusion (30% accuracy)

Which movement has the highest predictability with Invisalign: Upper molar distalization (88% predictability)

How much molar distalization is predictable with Invisalign: Up to 2.5 mm

How much arch expansion is predictable with Invisalign on molars: Up to 2 mm

What are SmartForce attachments: Small tooth-coloured composite resin shapes bonded to teeth

What do SmartForce attachments do: Provide extra leverage for complex tooth movements

What movements require SmartForce attachments: Rotations, extrusions, and torque corrections

Are SmartForce attachments visible: No, they are tooth-coloured

Does SmartTrack conform closely to attachments: Yes, more precisely than other aligner materials

What improvement in tooth movement predictability does SmartTrack plus attachments achieve: Greater than 75% improvement over off-the-shelf single-layer materials

What is ClinCheck: Align Technology's proprietary cloud-based treatment planning software

What does ClinCheck do: Transforms 3D scans into a personalised digital treatment plan

What is SmartStage technology: Algorithmic sequencing that determines which teeth move when

Why does movement sequencing matter: It prevents unwanted compensatory movements in anchor teeth

Can patients see their treatment outcome before starting: Yes, via ClinCheck's Outcome Simulator

What scanner is used at Core Dental Group for Invisalign: iTero intraoral scanner

Does the iTero scanner use putty impressions: No, it is a digital non-contact scanner

How does the iTero scanner work: A handheld wand captures 3D images using Class 1 laser technology

How long does a full arch iTero scan take: Under 30 seconds

Is the iTero scan displayed in real time: Yes, on a chairside screen

What study validated iTero Element 5D Plus accuracy: Nakornnoi et al., 2024, published in BMC Oral Health

How much does each aligner typically move a tooth: Approximately 0.25 mm per aligner stage

How long is each aligner worn: One to two weeks

How many aligner stages does a typical treatment involve: 20 to 50 or more stages

What is the typical total treatment duration: 12 to 24 months

How many hours per day must aligners be worn: 20 to 22 hours

What happens if aligners are not worn enough hours: Teeth do not move as planned

What is Core Dental Group's Invisalign provider status: Blue Diamond

How many cases does a Blue Diamond provider treat per year: More than 750 cases

Is Invisalign the same as traditional braces: No, it uses clear removable aligners instead of metal brackets and wires

Can Invisalign treat complex cases: Yes, increasingly so with SmartForce attachments and SmartStage sequencing

Is Invisalign only for mild cases: No, case scope has grown significantly over the past decade

Does provider experience affect Invisalign outcomes: Yes, clinical judgement shapes what the technology achieves

Where is Invisalign treatment available at Core Dental Group: Melbourne

Does ClinCheck draw on real-world case data: Yes, data from millions of previous cases

What is the first step of Invisalign treatment at Core Dental Group: An iTero 3D intraoral scan

What happens after the iTero scan: Data is sent to Align Technology for ClinCheck treatment planning

Who reviews and approves the ClinCheck plan: Core Dental Group's clinicians

When does aligner fabrication begin: After clinician approval of the ClinCheck plan

Are aligners custom-made per patient: Yes

Does Invisalign require any metal: No

Is Invisalign considered "plastic braces": No, it is a clinically engineered aligner system

What peer-reviewed journal published the 2015 Invisalign systematic review: The Angle Orthodontist

Who authored the 2015 Invisalign systematic review: Rossini et al.

What journal published the 2019 Invisalign literature review: Turkish Journal of Orthodontics

Who authored the 2019 Invisalign review: Tamer, Özta■, and Mar■an

Does space closure work well with Invisalign: Yes, up to 7 mm with good control

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## What is Invisalign? How clear aligner treatment works — explained by Core Dental Group

If you've heard the word "Invisalign" but aren't entirely sure what it means beyond "clear braces," you're not alone. Most people arrive at their first orthodontic consultation knowing they want straighter teeth, but with only a vague sense of how clear aligner treatment actually works. That gap matters, because patients who understand the science behind their treatment are better placed to follow wear instructions, set realistic expectations, and choose the right provider.

This article is the foundational explainer for Core Dental Group's Invisalign content series. Core Dental Group is Melbourne's trusted provider of Invisalign treatment, and this guide tackles the most essential question first: what is Invisalign, and what actually happens inside your mouth — and inside the technology — to move your teeth? Everything that follows in this cluster, from cost guides to case studies, builds on the clinical and scientific principles covered here.

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## ## What is Invisalign? A clear definition

Invisalign is a system of custom-fabricated, removable clear plastic aligners that move teeth incrementally through a pre-planned sequence of controlled forces. In plain terms, it's a modern orthodontic treatment that uses clear, removable aligners to gradually straighten teeth.

Developed and manufactured by Align Technology (NASDAQ: ALGN), Invisalign differs from other clear aligner systems in three key ways: its proprietary SmartTrack material, its SmartForce attachment system, and its ClinCheck digital treatment planning platform — all covered in detail below.

Unlike traditional metal braces, which use brackets bonded to teeth and connected by archwires, Invisalign aligners are worn over the teeth like a thin, snug-fitting mouthguard. Each aligner in the series is slightly different from the last — manufactured to represent the \*next\* intended position of your teeth, not where they currently sit. That's the core mechanical principle driving tooth movement.

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## ## The science of how Invisalign moves teeth

### ### Displacement-driven vs. force-driven mechanics

To understand how Invisalign works, it helps to compare it with traditional braces. Traditional braces use force-driven mechanics, applying continuous pressure via archwires to pull teeth into alignment. Invisalign uses shape-driven mechanics — sometimes called displacement-driven mechanics — where the aligner is slightly misshapen relative to the current tooth position, pushing the tooth into the space the plastic creates.

In practical terms: the aligner is manufactured to represent the next stage of your tooth's position. When you put it on, the plastic stretches over the tooth. The elasticity of the material — its tendency to return to its moulded shape — applies the force needed to push the tooth toward that target.

### ### Bone remodelling: the biology underneath

Tooth movement, whether from braces or aligners, isn't purely mechanical. It's biological. When controlled, sustained force is applied to a tooth, it triggers a cascade of cellular activity in the alveolar bone (the bone that holds your teeth in place). By using 3D modelling to stage specific movements, the aligners apply targeted pressure to specific tooth surfaces, driving biomechanical remodelling of the alveolar bone.

Research published in *\*Restorative Dentistry & Endodontics\** and indexed on PubMed confirms the molecular mechanism: an increased concentration of bone modelling and remodelling mediators at the pressure sites (IL-1 $\beta$ , RANKL) and tension sites (TGF-1 $\beta$ , OPN) was observed. The RANKL level was significantly increased at pressure and tension sites after 1 hour and after 1 week from the application of the orthodontic forces.

This is the same biological process that occurs with braces — Invisalign simply triggers it through a different mechanical pathway.

### ### What peer-reviewed research says about movement accuracy

A systematic review published in \*PubMed\* (Rossini et al., 2015), which assessed 11 peer-reviewed studies including two Randomised Clinical Trials, found that the amount of mean intrusion reported was 0.72 mm. Extrusion was the most difficult movement to control (30% accuracy), followed by rotation. Upper molar distalization showed the highest predictability (88%) when a bodily movement of at least 1.5 mm was prescribed.

An updated systematic review (Tamer et al., 2019) found that mesio-distal tooth movement showed the highest predictability, with molar distalization up to 2.5 mm and space closure of 7 mm performed with good control. Arch expansion is predictable up to 2 mm on molars.

These findings matter clinically: they explain why experienced providers like Core Dental Group — with the case volume and specialist oversight that comes with Blue Diamond status — are better placed to plan treatment sequences that account for the specific movements where aligners require the most careful engineering (see our guide on \*What Is an Invisalign Blue Diamond Provider — and Why It Matters for Your Treatment\*).

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### ## SmartTrack material: the engineering behind the aligner

The quality of the plastic used to make an aligner isn't a minor technical detail — it's central to how effectively your teeth move and how comfortably you experience treatment.

#### ### What SmartTrack is

Invisalign's clear aligners are made from patented SmartTrack™ material — a multilayer, medical-grade polyurethane resin designed specifically for orthodontic tooth movement. Launched commercially in 2013, Align's proprietary SmartTrack material is an innovative multi-layer polymer that delivers more gentle, constant force to improve control of tooth movements with Invisalign clear aligners.

The development process was extensive. Align Technology spent eight years researching SmartTrack technology and tested 260 different materials before settling on the proprietary final formula.

#### ### Why constant force matters

Earlier-generation aligner materials had a notable clinical limitation: compared to other aligner materials, which relax and lose a substantial percent of energy in the initial days of aligner wear, SmartTrack material maintains more constant force over the duration of patient wear.

This matters because intermittent or decaying force is less effective at sustaining the bone remodelling process. It's the \*consistency\* of force — not just its initial magnitude — that drives reliable tooth movement. SmartTrack is a highly elastic aligner material that delivers gentle, more constant force to improve control of tooth movements with Invisalign clear aligner treatment. It is an engineered multilayer polymer designed to maintain high elasticity over the one-to-two-week wear cycle.

#### ### The clinical evidence for SmartTrack

A study of over 1,000 patients treated with Invisalign aligners made with SmartTrack shows statistically significant improvement in control of tooth movements such as rotations and extrusions ( $p < 0.001$ ), compared to patients treated with aligners made with prior Invisalign material.

When combined with the SmartForce attachment system, the results are more pronounced: Invisalign clear aligners made with SmartTrack material are clinically proven to achieve greater than 75%

improvement in overall tooth movement predictability compared to clear aligners made with off-the-shelf single-layer material, commonly used by other clear aligner manufacturers.

This is a meaningful differentiator when weighing Invisalign against mail-order or budget clear aligner brands (see our guide on [\\*Invisalign vs. Other Clear Aligner Brands in Australia: How Core Dental Group's Choice Affects Your Outcome\\*](#)).

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### ## SmartForce attachments: when aligners need extra grip

Not every tooth movement can be achieved through aligner pressure alone. Some rotations, extrusions, and torque corrections need additional biomechanical leverage — and that's where SmartForce attachments come in.

SmartForce attachments are small tooth-coloured shapes bonded to your teeth before or during your Invisalign treatment. Made from tooth-coloured composite resin, these attachments give the aligner additional contact points, allowing it to apply force in directions that the plastic alone can't achieve.

SmartTrack material was designed specifically for orthodontic treatment with Invisalign aligners and conforms more precisely to tooth morphology, attachments, and interproximal spaces than other aligner materials. This close conformity is what makes the SmartTrack-plus-attachment combination so effective: the aligner wraps snugly around each attachment, turning it into a lever point for complex movements.

SmartForce attachments allow for complex root movements that were previously out of reach with clear aligners. This is one reason the clinical scope of Invisalign has grown significantly over the past decade — movements once considered exclusively the domain of fixed braces are increasingly achievable with a well-engineered aligner system. For a detailed breakdown of which conditions Invisalign can and cannot treat, see our guide on [\\*Orthodontic Conditions Treated with Invisalign: Crowding, Gaps, Overbite, Underbite, and More\\*](#).

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### ## The iTero 3D scan: where treatment begins at Core Dental Group

Every Invisalign treatment at Core Dental Group starts not with a tray of messy putty, but with an iTero intraoral scanner — a handheld wand that captures a precise digital map of your teeth in minutes.

#### ### How the iTero scanner works

Unlike traditional impression materials, the iTero scanner uses a small wand gently moved around the patient's mouth to capture highly accurate, three-dimensional images of the patient's teeth and gums. The system digitally captures the 3D geometry and colour of the patient's intraoral dental structures using a proprietary optical, non-contact, focus detection technique using Class 1 laser technology.

The iTero Element 5D Plus can complete a full arch scan in under 30 seconds. The scan renders in real time on a chairside screen, so both the clinician and patient can immediately view a detailed 3D model of the current tooth positions.

#### ### Why digital impressions are clinically superior

The shift from physical to digital impressions isn't just about patient comfort — it has real clinical implications. The Invisalign System is optimised by integrating the iTero digital scanner, which enhances treatment accuracy, efficiency, and patient engagement. The iTero scanner captures high-resolution 3D images of the teeth and bite, replacing traditional impressions with a faster, more comfortable digital process. These scans feed directly into Invisalign's treatment planning software, enabling precise aligner customisation and real-time outcome simulations that help patients visualise their future smiles.

The system's advanced algorithms and high-resolution imaging allow dentists to precisely analyse tooth movements, simulate treatment outcomes, and plan the necessary steps for successful procedures. This level of accuracy reduces chairside adjustments, cuts down on remakes, and improves overall treatment efficiency.

A peer-reviewed crossover reliability study published in *\*BMC Oral Health\** (Nakornnoi et al., 2024), examining the accuracy of the iTero Element 5D Plus against conventional alginate impressions in children and teenagers, confirmed the clinical-grade accuracy of digital impressions across full-arch scans — validating the iTero's use as the gold standard for Invisalign case initiation.

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## ## ClinCheck: the digital blueprint of your treatment

Once the iTero scan is captured at Core Dental Group, the data is sent to Align Technology's servers, where Invisalign's proprietary ClinCheck® software transforms your scan into a personalised treatment plan.

### ### What ClinCheck does

ClinCheck is the digital backbone of Invisalign treatment, transforming the traditional orthodontic workflow from analogue impressions to a fully digital process that spans from initial digital scans through to final aligner fabrication. This system creates a direct connection between diagnostic data and treatment execution, changing how orthodontic care is delivered.

Your doctor uses proprietary ClinCheck software to map out the path to your smile, right down to the tiniest shift — from your first aligner to your final result. The 3D visual interface lets your doctor customise your treatment. The algorithm helps calculate just the right amount of force for every tooth movement. The software, with input from your doctor, helps ensure every tooth moves in the right order and at the right time.

### ### SmartStage technology: sequencing matters

A key but often overlooked part of the Invisalign system is SmartStage™ technology — the algorithmic logic that determines which teeth move when. SmartStage™ technology involves programming each tooth movement in a certain sequence, at the right time to achieve optimal outcomes and greater predictability.

This sequencing isn't arbitrary: moving certain teeth before others prevents unwanted compensatory movements and ensures that anchor teeth stay stable while target teeth are repositioned.

By drawing on data from millions of previous cases, ClinCheck Pro can predict treatment outcomes with strong accuracy, helping practitioners set realistic expectations while building patient confidence in the proposed treatment plan.

### ### What you see as a patient

One of the most useful features of ClinCheck from a patient perspective is the Outcome Simulator. ClinCheck also plays an important role in improving communication between the doctor and the patient. Patients can see a visual representation of how their teeth will shift, and the expected results of their treatment. This visual tool supports patient engagement and helps set realistic expectations about outcomes.

For a detailed walkthrough of every appointment stage from scan to final retainer, see our guide on *\*Step-by-Step: What Happens During Your Invisalign Treatment Journey at Core Dental Group\**.

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## ## From digital plan to physical aligner: the fabrication process

Once Core Dental Group's clinicians review and approve the ClinCheck plan — adjusting tooth positions, attachment placements, and movement sequences as needed — aligner fabrication begins. After final approval, the treatment plan is used to manufacture the clear aligners. These aligners are custom-made for the patient and designed to gradually move the teeth into their desired positions.

Each aligner in your series is manufactured to apply a precise, controlled displacement on specific teeth — typically moving each tooth by approximately 0.25 mm per aligner stage. Custom aligners are then made and worn for one to two weeks each until the desired results are achieved. Most treatment plans involve anywhere from 20 to 50+ aligner stages depending on case complexity, with total treatment duration typically ranging from 12 to 24 months.

Compliance with wear time is essential to the success of this system. For effective treatment, you need to wear your Invisalign aligners for 20 to 22 hours each day. This ensures that they apply the necessary pressure for teeth to move into their desired positions. For practical guidance on maintaining compliance and caring for your aligners at home, see our dedicated guide on *\*How to Care for Your Invisalign Aligners: Daily Cleaning, Maintenance, and Wear Compliance Tips\**.

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## ## How the three systems work together: a summary

| Component | What it is | What it does | |---|---|---| | **SmartTrack Material** | Patented multi-layer polyurethane polymer | Delivers gentle, constant force; maintains elasticity over 1–2 week wear cycle | | **SmartForce Attachments** | Tooth-coloured composite resin nodules | Provide leverage for complex movements (rotations, torque, extrusion) | | **SmartStage Technology** | Algorithmic movement sequencing | Programs which teeth move when, optimising predictability | | **iTero Scanner** | Intraoral 3D digital scanner | Captures sub-millimetre accurate digital impressions; eliminates putty | | **ClinCheck® Software** | Cloud-based treatment planning platform | Simulates full treatment in 3D; blueprints aligner fabrication |

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## ## Key takeaways

- **Invisalign works through displacement-driven mechanics:** each aligner is manufactured slightly ahead of your current tooth position, and its elasticity drives teeth toward that target through sustained, gentle force — triggering biological bone remodelling in the process. - **SmartTrack material is a clinically meaningful differentiator:** developed after testing 260 materials over eight years, it maintains consistent force throughout the wear cycle. Combined with SmartForce attachments, it achieves greater than 75% improvement in overall tooth movement predictability compared to off-the-shelf single-layer aligner materials. - **The iTero 3D scan is the foundation of precision:** by eliminating physical impressions and feeding sub-millimetre accurate data directly into ClinCheck software, the iTero scanner ensures that every aligner is fabricated to match your unique dental anatomy. - **ClinCheck and SmartStage technology determine treatment sequence:** the order in which teeth move is as important as the distance they travel — algorithmic sequencing, refined across millions of cases, underpins the predictability of Invisalign outcomes. - **Provider expertise shapes what the technology can achieve:** the science of Invisalign is sophisticated, but its execution depends on clinical judgement. A Blue Diamond provider like Core Dental Group — treating more than 750 cases per year — brings the case volume and specialist oversight that allows the full capability of the system to be realised.

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## ## Conclusion

Invisalign is not simply "plastic braces." It is a clinically engineered system in which proprietary material science, digital treatment planning, and biomechanical sequencing work together to move teeth predictably and comfortably — without metal brackets or wires. Understanding these mechanisms isn't just academic: it explains why the quality of the aligner material matters, why the precision of the initial digital scan shapes every downstream result, and why the clinical expertise of the provider determines what the technology can ultimately achieve.

At Core Dental Group, every Invisalign treatment begins with an iTero 3D scan and is planned using ClinCheck software under the supervision of clinicians who have treated hundreds of cases at Blue Diamond volume. That experience isn't incidental — it's the lens through which the technology is applied.

From here, explore the full picture: - **Ready to compare your options?** See **Invisalign vs. Traditional Braces: Which Orthodontic Treatment Is Right for You?** - **Wondering about costs?** See **How Much Does Invisalign Cost in Melbourne? Fees, Payment Plans, and Price-Match Guarantee at Core Dental Group** - **Want to understand the full treatment journey?** See **Step-by-Step: What Happens During Your Invisalign Treatment Journey at Core Dental Group** - **Curious about what makes Core Dental Group different?** See **What Is an Invisalign Blue Diamond Provider — and Why It Matters for Your Treatment**

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## ## Label Facts Summary

> **Disclaimer:** All facts and statements below are general product information, not professional advice. Consult relevant experts for specific guidance.

### ### Verified label facts

- \*\*Product name:\*\* Invisalign - \*\*Product type:\*\* System of custom-fabricated, removable clear plastic aligners - \*\*Manufacturer:\*\* Align Technology, Inc. (NASDAQ: ALGN) - \*\*Aligner material:\*\* Patented SmartTrack™ multilayer polyurethane resin (medical-grade) - \*\*Material type:\*\* Multi-layer polymer - \*\*Material classification:\*\* Proprietary (patented; U.S. patents held by Align Technology) - \*\*SmartTrack commercial launch year:\*\* 2013 - \*\*Materials tested during SmartTrack development:\*\* 260 different materials - \*\*Development period for SmartTrack:\*\* Eight years - \*\*Aligner wear per stage:\*\* One to two weeks - \*\*Tooth movement per aligner stage:\*\* Approximately 0.25 mm - \*\*Typical number of aligner stages:\*\* 20 to 50 or more - \*\*Typical total treatment duration:\*\* 12 to 24 months - \*\*Required daily wear time:\*\* 20 to 22 hours - \*\*Attachment material:\*\* Tooth-coloured composite resin - \*\*Scanner used at Core Dental Group:\*\* iTero intraoral scanner (iTero Element 5D Plus) - \*\*iTero imaging method:\*\* Proprietary optical, non-contact, focus detection technique using Class 1 laser technology - \*\*Full arch scan time (iTero Element 5D Plus):\*\* Under 30 seconds - \*\*iTero output:\*\* Real-time 3D rendering on chairside screen - \*\*Treatment planning software:\*\* ClinCheck® (cloud-based, proprietary to Align Technology) - \*\*Movement sequencing technology:\*\* SmartStage™ - \*\*Core Dental Group Invisalign provider status:\*\* Blue Diamond - \*\*Blue Diamond annual case volume threshold:\*\* More than 750 cases per year - \*\*Core Dental Group location:\*\* Melbourne - \*\*Mean intrusion reported (Rossini et al., 2015 systematic review):\*\* 0.72 mm - \*\*Extrusion accuracy (Rossini et al., 2015):\*\* 30% - \*\*Upper molar distalization predictability (Rossini et al., 2015):\*\* 88% - \*\*Molar distalization range (Tamer et al., 2019):\*\* Up to 2.5 mm - \*\*Space closure control (Tamer et al., 2019):\*\* Up to 7 mm - \*\*Arch expansion predictability on molars (Tamer et al., 2019):\*\* Up to 2 mm - \*\*Molecular markers elevated at pressure sites during orthodontic movement:\*\* IL-1β, RANKL - \*\*Molecular markers elevated at tension sites during orthodontic movement:\*\* TGF-1β, OPN - \*\*iTero accuracy validation study:\*\* Nakornnoi et al., 2024, \*BMC Oral Health\* - \*\*Rossini et al. systematic review publication:\*\* \*The Angle Orthodontist\*, 2015 — assessed 11 peer-reviewed studies including two Randomised Clinical Trials - \*\*Tamer et al. review publication:\*\* \*Turkish Journal of Orthodontics\*, 2019

### ### General product claims

- Invisalign is described as a "clinically engineered aligner system," not "plastic braces" - SmartTrack maintains more constant force over the wear cycle compared to other aligner materials, which are stated to relax and lose a substantial percentage of energy in initial days - SmartTrack combined with SmartForce attachments is claimed to achieve greater than 75% improvement in overall tooth movement predictability compared to off-the-shelf single-layer aligner materials - A study of over 1,000 patients is cited showing statistically significant improvement in rotations and extrusions with SmartTrack vs. prior Invisalign material ( $p < 0.001$ ); original study not independently linked - SmartTrack is claimed to conform more precisely to tooth morphology, attachments, and interproximal spaces than other aligner materials - ClinCheck is stated to draw on data from millions of previous cases to improve outcome prediction accuracy - The iTero scanner is claimed to enhance treatment accuracy, efficiency, and patient engagement versus traditional impressions - Provider experience and case volume (Blue Diamond status) are presented as factors that improve clinical outcomes - Invisalign is stated to be capable of treating complex cases increasingly previously considered exclusive to fixed braces - The ClinCheck Outcome Simulator is described as enabling patients to visualise their future smile before treatment begins - SmartStage technology is described as preventing unwanted compensatory movements through algorithmic sequencing